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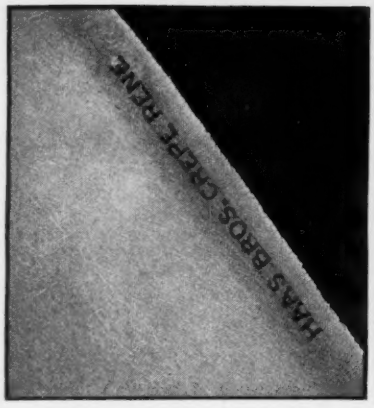

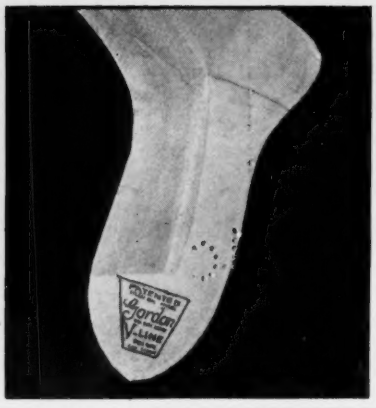

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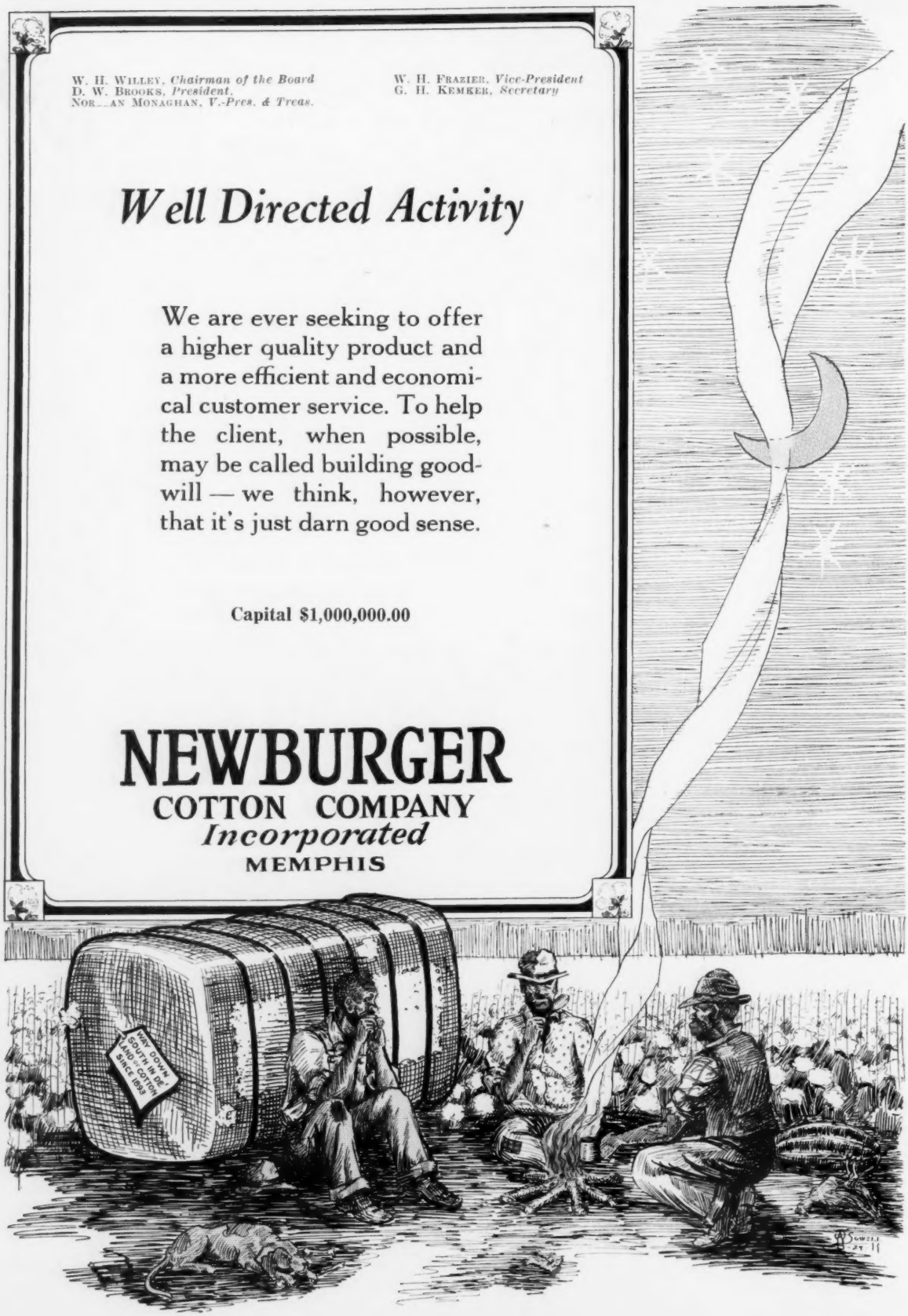


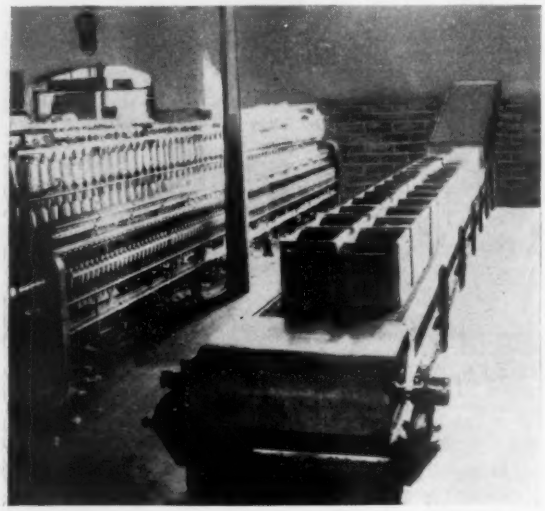
A FILLING CONVEYOR AND CONDITIONER

By John W. Card

A combination filling conveyor and conditioning machine has recently been installed in one of the South's large weave mills, and a description of this machine will, no doubt, be of interest to many of COTTON's readers. The system is unique in its field and was especially designed to fit local conditions. The idea, however, can be adapted to the operating conditions in other mills.

Changes Made to Adopt the System.

The mill in question has recently undergone some quite extensive changes. Among these changes was a relocating of spinning frames so that all filling yarns could be made in one of the three spinning rooms of the mill. The former

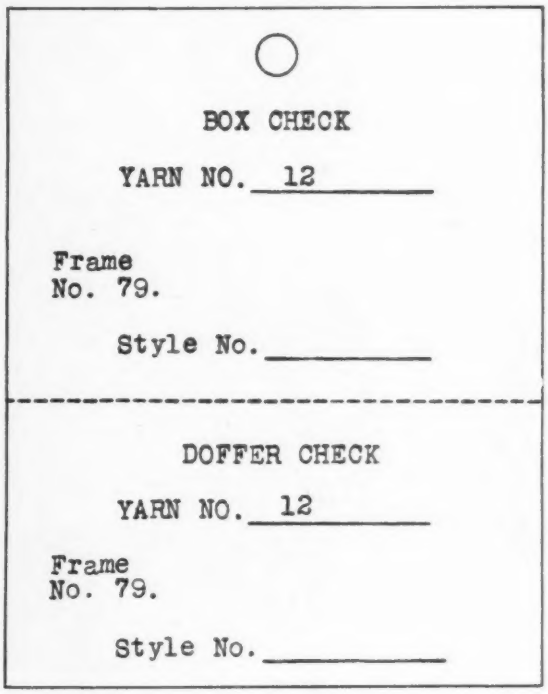


The entering end of the conveyor is located at about the middle of the filling spinning room and extends into the room for some thirty-five feet, which allows ample room for loading without crowding.

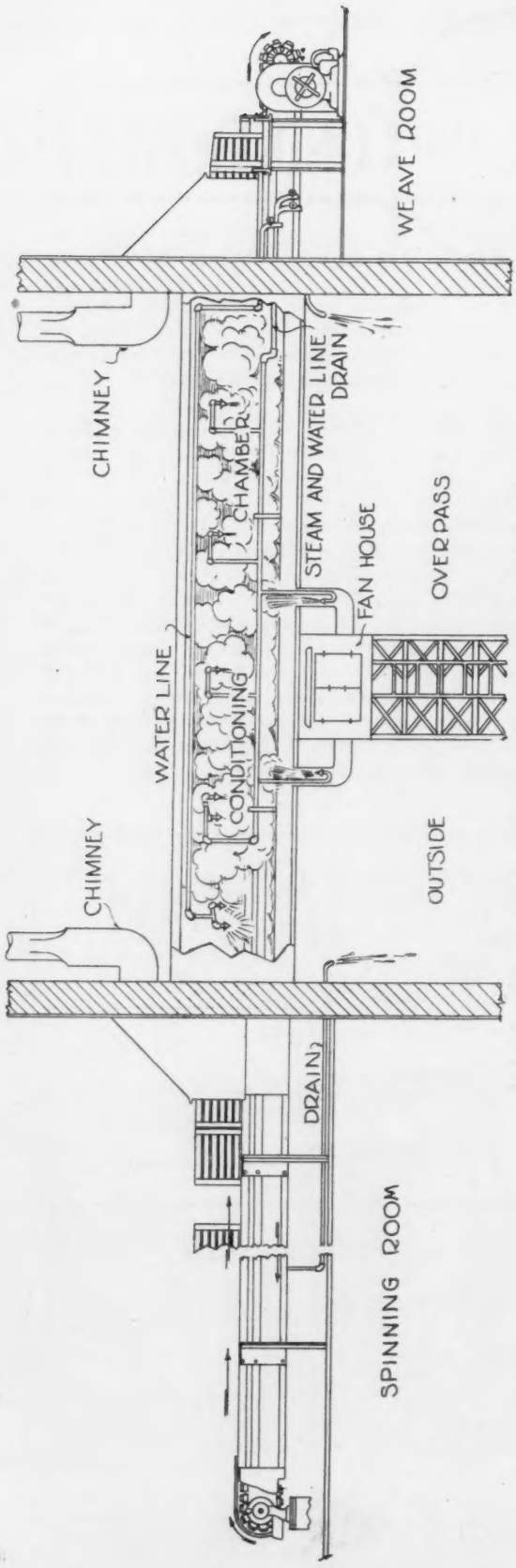
method was to use a portion of each of the spinning rooms to make filling, and the balance for warp spinning and spooling.

It was necessary, also, to change the type of filling box to fit the new conditioning system. With the old system, one type box was used by the filling doffers, and another was used to hold the filling at the loom. Both these old type boxes were of the ordinary closed side and bottom variety. For the new system there was needed a combination loom and doff box that would be of open construction, to allow the yarn to be conditioned without being removed from the box. This situation was met by making boxes with open spaces in sides, ends, and bottom. The boxes are constructed of two-inch strips of wood placed about one-quarter inch apart. The corner supports are of angle shaped zinc. These zinc supports are fastened to the wooden strips with copper rivets. The zinc and copper are not affected by the moisture and heat in the conditioning chamber, and there is no danger of getting rust spots on the yarn.

The method of marking the different sizes of filling yarn was changed. Approximately 25 different kinds of filling are made to fit the many different styles of goods woven at this mill, and doffers formerly stopped the filling frame before doffing and marked each size filling with one or two, colors of chalk, to distinguish it from other sizes of filling. This size filling was then doffed and emptied in a filling bin at one end of the spinning room. By the new method, the use of chalk to mark the different fillings is discontinued. A box check, with the yarn number printed thereon, is now used to mark the different kinds of filling. One check being placed in each box of filling. This box check is torn from a combination ticket, as shown in the sketch herewith. A number of these tickets are kept hanging on each filling frame. They are marked with the yarn



The combination filling ticket showing the box check and the doffer's check. These checks are separated by tearing along the perforated line.



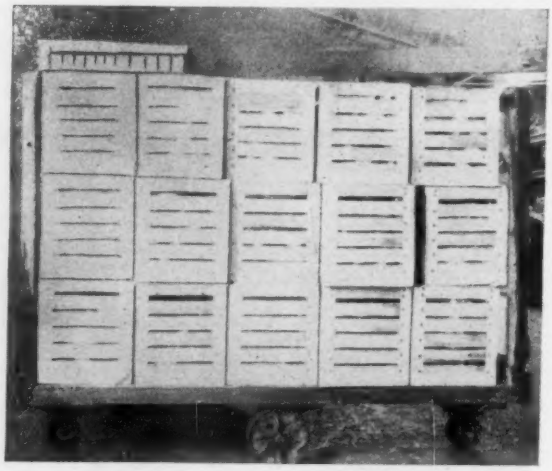
A General Elevation of the Complete Conveying and Conditioning Unit.

number, and the frame number, as shown. A doffer is used for each side. When he doffs a side, he takes one of the tickets from its nail on the frame and places the box check end in the box of filling. He then turns the doffer check end over to a check boy. The box of filling, with the box check in it, is then placed on the conveyor.

By the old method the doffers were paid by the day. With the new method in operation they are paid by the piece rate system. As each side is doffed, the doffer turns the doffer check portion of the ticket over to the check boy. The check boy enters the number of doffs of each kind of filling in a book. This book, showing the doffers name, and the number of doffs made, is turned in to the office and used in calculating the doffer's pay.

One of the most important changes made in adopting the new system was the change in the method of handling the filling.

With the old method the doffer took the filling to one end of the spinning room and dumped it in a large bin



A specially constructed filling truck designed to handle fifteen boxes of filling at a load.

marked to show the number of the filling to be placed therein. A filling roller, from the weave room, then came to this bin, and reloaded the filling, by hand, in a filling wagon. This load of filling was taken to a conditioning machine, located in the weave room, and conditioned. From the conditioning machine it was again loaded in the filling wagon and was then taken to the loom, and unloaded, by hand from the wagon to the filling boxes on the loom. One of the old conditioning machines was located in each weave room. No one of them was large enough to condition the filling for all the looms.

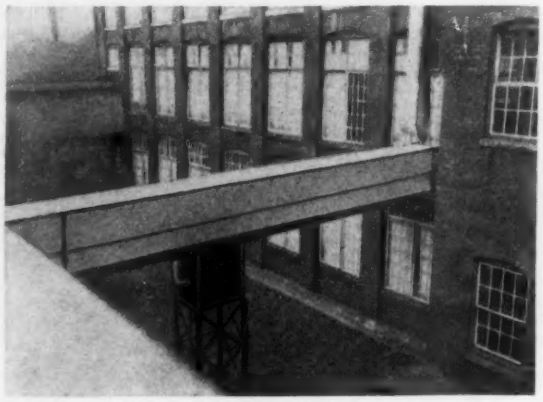
By the new method the doffer places the box of filling on the conveyor, located near the center of the spinning room, and it is conditioned as it slowly passes through the conditioning chamber while on its way to the weave room. On arrival in the weave room it is stacked to one side by the machine tender. From this place the filling roller then puts it in trucks, constructed to handle fifteen boxes at a load, and hauls it to the loom. The empty box is removed from the loom and the full box placed in its stead. Thus one of the obvious advantages is that the filling need not be touched by hand from the time it is doffed to the time the battery hand puts it in the loom.

The Conveyor.

The spinning room in which the mills' filling yarns are made is located in the second story of a building situated some fifty-five feet from another building. Three of the four weave rooms are located on the second story of this other building. This situation permitted the convenient installing of a conveyor for transporting the filling yarns from the spinning room to the weave room.

Four filling frames were moved from a location near the center of the spinning room to enable the conveyor to extend 35 feet back into the room so as to provide space about the conveyor for doffers to come and go without being crowded.

The conveyor proper is an endless chain of wooden strips fastened to metal links. The links are fastened to metal rollers that run in L-shaped iron guides. The conveyor stands 25 inches above the floor. The wooden strips, 2¾ inches wide, are spaced ⅜ inch apart. This allows the steam and water in the conditioning chamber to pass freely through the spaces. The strips are wide enough to accommodate two boxes of filling placed side by side. In addition, there are blocks of wood down the center of the line



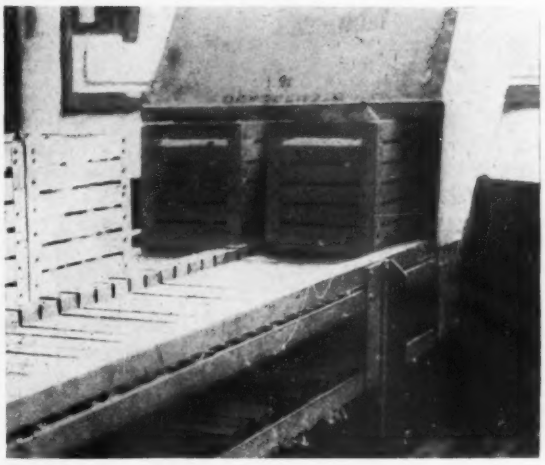
Exterior view of the conditioning chamber and fan house. The distance between the buildings is fifty-five feet.

of strips which prevent the boxes from being placed one against the other. The construction is plainly shown in the illustrations.

After traveling for 35 feet in the spinning room the conveyor enters and passes through the 55-foot conditioning chamber between the buildings and then extends about five feet into the weave room. It is driven by a three-horsepower motor, connected through a speed reducer. The motor is located in the weave room. It is geared to travel at the rate of ten feet per minute. This rate of speed causes the yarn to be in the conditioning chamber, and under the influence of the steam and water, for six minutes. This is approximately twice the length of time formerly used for conditioning the filling. Tests made in the laboratory show that this machine conditions the yarn very thoroughly, the amount of moisture found in the yarn conditioned with this machine being substantially above that found in yarn conditioned in the old way.

The capacity of the machine is sufficient to condition more than six hundred boxes of filling per hour.

One tender, stationed in the weave room, takes care of the machine. The doffers place the boxes of filling on the conveyor in the spinning room, and no attendant is needed



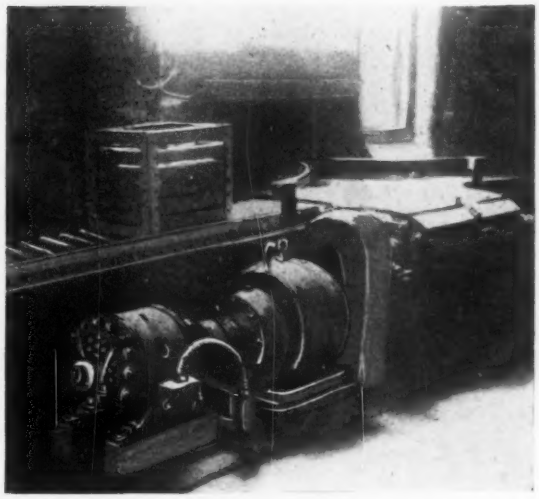
This photo was taken close to the wall in the spinning room and shows the conveyor entering the conditioning chamber. This illustration shows the construction of the conveyor, the filling boxes, and the entrance to the steam box.

there. The tender is principally engaged in taking the filling off the slides or benches, to which it passes after leaving the conveyor, and stacking it to one side where the filling rollers can get to it. The tender also watches the hygrometer and sees that the conditioning chamber does not get overheated.

The Conditioning Chamber.

The conditioning chamber is a metal lined overpass connecting the spinning and weave rooms. It is large enough to accommodate the loaded conveyor, together with the steam and water pipes and connections. The yarn is being conditioned from the time it leaves the spinning room and starts through the overpass until it reaches the weave room, where it is turned off the conveyor by curved guide rods.

The chamber is conditioned by means of steam and water. Two lines of piping run into the chamber, as shown



The driving unit for the conveyor. This is located in the weave room. The curved bars over the conveyor turn the bobbin boxes automatically to right or left onto receiving benches equipped with rolls so the boxes move easily. The boxes are then stacked by the attendant.

in the accompanying sketch. One line carries water. It has two heads located near the spinning room end of the chamber. These heads spray water down on the filling as it enters the chamber. The other line carries steam and water. Heads are placed at intervals along this line to throw the moisture down on to the yarn as it passes through. Two heads connect to this line and extend down into pipes, under the conveyor, connecting to two fans. The fans blow the moisture up through the slits in the conveyor and on the yarn. The current of air from the fans can be reversed and used to cool off the chamber in case it gets overheated.

A recording hygrometer is used to show the amount of heat in the chamber. The cords connecting to the wet and dry sides of the hygrometer reach well back in the chamber and give an accurate test of the condition in the chamber. It has been found that 120 degrees F., is about the proper temperature to maintain.

Two chimneys are connected to the conditioning chamber to carry off the steam that would otherwise come out of the chamber at the two ends, and wet portions of the spinning and weave rooms near the conveyor.

Some of the advantages derived from the adoption of this conveyor and conditioning machine may be summed up as follows:

a. The handling of the filling is reduced to a minimum, resulting in cleaner and less scuffed-up filling.

b. It reduces the number of machines and machine tenders needed to condition the filling.

c. It gives a more thoroughly conditioned yarn.

d. It reduces the crowding around the filling bins and increases the efficiency of handling the filling.

Eastern North Carolina Spinners Discuss Home Grown Cotton and Other Cottons

A discussion of using locally-grown North Carolina cotton in the mills of that section featured the meeting held by the Eastern North Carolina Division of the Southern Textile Association at Raleigh, N. C., on Friday, October 30th. The meeting consisted of one session on Friday morning, which was held in the Textile Building of the North Carolina A. & E. College.

Dr. E. C. Brookes, president of the college, welcomed the men to Raleigh, being introduced by Dean Thomas Nelson of the textile school. After a few announcements, T. W. Mullen, superintendent of the Rosemary (N. C.) Manufacturing Company, who is chairman of the division, began the discussion on cotton.

Mr. Mullen started by explaining the purpose of the meeting was to discuss the use of the cotton grown in Eastern North Carolina, instead of the "southern" varieties, referring by this term to the cotton bought from Georgia, Alabama, and other southern growing states. He declared there is plenty of cotton grown in Eastern North Carolina to supply the mills of that section. In his own county, Halifax County, he said, there were 40,000 bales of cotton raised per annum, and that the consumption of the county's mills did not exceed that amount. A big part of the state's production, he said, was going for export, and the English and German mills are using that cotton and making good yarn out of it. "It is either because they are more skilled or take more time doing it," he said, "but we would not want to do it at a great expense of production. You must reduce your speeds and increase twist to run local cotton, but there is a point where it would not be economical, where you could afford to pay more for your cotton and get a better production and save money. So the question we want to bring up is using the ¾- and ⅞-inch North Carolina cotton—later to discuss the question of settings, speeds, drafts, twists, etc., used on it. It is with us either a matter of learning to run the cotton we have or of educating the farmer to raise a better grade of cotton. Some sections of Eastern North Carolina are raising better staples. We have had cotton brought into our mill that run a full inch and over but the great trouble is there is not enough of it, and you all know that you cannot very well mix it up. We buy generally about four or five thousand bales of cotton right off of the wagons. We have been using that for filling, buying 'southern' cotton for warp, but if you pick the best local cotton you can do about as well with it as with the 'southern' Strict Low Middling, 1- to 1 1/16-inch. If you can get good local cotton I do not see very much difference in it; except that all of the 'southern' cotton is more trashy, with more leaf, sticks, motes, dirt and trash in it, while the local cotton we get is very clean.

"The first idea to take up here was running it through the bale breaker and picker room; is there any great difference in running the local and 'southern' cotton? It depends on the grade of cotton you are getting. As far as we have found there is not as much difference in running it in the card room as you get in the spinning room."

M. R. Vick, overseer of carding, Rosemary Mfg. Company, suggested that a great deal might be accomplished by a conference between the mill owners and the farmers' organizations. He asked why it is "that two bales of cotton from the same land, from the same farm, will be of two different staples; why should this be when they use the same grade and name of seed, say the Mexican big boll?" He added that he had found that the cotton raised in "red land" seems to have better spinning qualities than that from the sandy areas. Mr. Mullen added to this that "we used to get cotton from Elizabeth, sixteen miles west of us, and it seemed to have a better body and better strength coming from the red lands. "

"Is there any greater variation in the staple in local cotton?" asked Mr. Cates of Edenton. "I do not think so," replied Mr. Mullen. "All of the cottons seem to be bad enough, though, so far as uniformity of staple is concerned."

C. M. Black, Superintendent, Borden Mfg. Co., Goldsboro, N. C., declared that to his mind the most important thing in connection with the local cotton was to work on the farmers of the section to pay attention to the seed, and prevent so much mixing of the different seeds before planting. Norman B. Hill, superintendent, Caswell Cotton Mills, Kinston, N. C., said that "I think the reason we have so much mixed seed is in the ginning. A farmer can raise any kind of cotton he wants to, but unless he has it ginned

in his own gin, he will get his seed mixed in the ginning. I think that is where we are having a lot of trouble with different staples."

Substantiating this suggestion, Mr. Mullen said that "the best Eastern North Carolina cotton we ever had was grown by an association of farmers in Battleboro. It was Mexican big boll. We have never run any cotton from anywhere that ran any better. It was raised by a number of farmers who had a gin and raised enough to furnish cotton to it and they kept it straight. It was just as good as any we ever had from anywhere."

J. M. Gregg, secretary of the Southern Textile Association, said, "I heard the other day of a mill man having the farmers around in his locality to raise cotton for him; he had them to use a certain kind of seed, and by getting them to do this and sell the cotton to the mill, he estimates he is getting the same results as from buying cotton from the 'southern' states, and he says he is saving several thousand dollars a year."

"I do not think there is any question that that should be the policy in North Carolina," declared Dean Nelson. "The farmers should be encouraged to select the seed especially proven best for that community. I believe the mill men would be willing to pay a better price if they knew they were getting a better grade. I think that is the only salvation of North Carolina. But, there seems to be some

T. W. Mullen, Chairman, Eastern North Carolina Division.

prejudice in the state against cotton grown in the state, and if that prejudice can be overcome, by the farmers selecting certain staples, I believe it can be done by the mill men getting together with the farmers."

"That is certainly necessary," declared Mr. Mullen. "But the farmer must know he will get more for his cotton if he raises better cotton."

W. G. Reynolds, superintendent, Eastern Mfg. Co., Selma, N. C., in connection with Dean Nelson's mention of the prejudice against home grown cotton, told of a mill which once had a bale grown in Fayetteville, N. C., to be re-shipped to their mill from another southern state, and that since that time they had employed a young man with mill experience to grade and select their cotton, and that now, buying five to six thousand bales of cotton, from 1 to 1 1/16-inch, for 26s to 40s, the mill uses locally grown cotton exclusively.

"Do they pay a premium for it?" asked the chairman.

"About 100 points 'on' the local market," replied Mr. Reynolds.

"That is necessary, and it is right," said the chairman. "They should be paid more for better cotton."

Dr. H. Y. Winters, head of the state school's agricultural activity, was called upon to discuss the subject. He said that when the schools' work was begun, they were considering only the farmer side of the subject, but it was not long before the mills had to be considered, "because we found we are producing just about as much cotton as is being manufactured in the state, but so much of it is exported through Norfolk and Wilmington. We tried to get information from the mills as to what variety of cotton was best, and we found that the needed production was about 600,000 bales of 1 to 1 1/16-inch, and we are now growing it on three of our branch stations. We are improving the seed of this cotton, and we have wanted to see to what extent

Norman B. Hill, Secretary and Treasurer of the Eastern North Carolina Division.

we had met the demands of the mills, and so with the cooperation of Professor Nelson and others we compared our cotton with Texas cotton, selecting the same length in eight bales, and we found that the North Carolina cotton had approximately two per cent less waste and gave as strong a yarn as the Texas, so we are not afraid of the Texas cotton from the standpoint of competition."

Discussing the difference in length from the same farm, Dr. Winters said that "during the past two or three years we have had difficulty from the dry season. From the bottom of the plant to the top there would be as much as 1/8 inch difference in the cotton. That can be taken care of by keeping the pickings separately, and we are trying to advise the farmer to do that. In very dry seasons the cotton takes its length in three weeks. We are very much pleased with the spinning tests and we are going to make the cotton even better for you. We are just now working to find some of these characteristics that the buyers call body and character, etc., as to just what they really mean."

Dr. Winters said that one big problem now is that many farmers sell their cotton to men who don't know 3/8-inch from 1 1/8-inch, and suggested the possibility of licensing buyers who have such information. It is discouraging to a farmer, he said, to lose the five per cent yield necessary to

increase the staple 1/16 inch, and then get no more for it. "I am glad to hear that North Carolina can spin her own cotton," he said, "and I want to assure you that we are going to make it even better for you, but we are going to have to have some cooperation in getting a better price for it."

Mr. Cates asked Dr. Winters to explain the relation of Cleveland to Mexican big boll.

"Cleveland is one of the old cottons of the South," said Dr. Winters, "originating in Georgia, and principally 7/8 to 15/16 inch in length. It is a standard cotton of very uniform quality, and it has been used in this state to replace half-and-half. Our reports show that 66 per cent of the crop this year came from Cleveland seed. It is a heavy yielder, smaller boll, short cotton.

"The Mexican big boll is not an Eastern cotton, being brought from Texas, and is actually different quality of fiber. It is a heavier fiber. The Cleveland runs 31 and the Mexican 54 in relation to strength of fiber, and of course the yarn goes up in proportion."

"Define half-and-half cotton," suggested Mr. Cates.

"This," replied Dr. Winters, "is a cotton breeded for a high gin turn-out. As you increase the gin turn-out you reduce the length and make the seed smaller. There are several cottons that belong to this group. Half-and-half will give about 1,000 to 1,100 pounds of cotton. It is a small boll, small seed, very short cotton."

Mr. Mullen asked if, in keeping his seed separate, the farmer could do this without the deterioration of the seed.

"We have worked out a very good system on that," said Dr. Winters. "It is expensive to buy the best seed, and so we recommend buying one bushel of seed for each twenty acres. With this amount a man can keep his farm replenished at a very low cost."

"He mixes that in with his seed?" asked Mr. Mullen.

"He plants it in an isolated place and saves the seeds for the next year," replied Dr. Winters. "He is never more than a year from his breeding, and after a while that seed becomes adapted to the section; some times cotton bred under conditions are adapted to those conditions, and it gives him one year to adapt his seed for good results. It is not very expensive."

"Then that is a point we need to educate the farmers on," declared the chairman.

Mr. Vick asked Dr. Winters whether there was any difference in the spinning qualities of the cotton grown in Wake County and on the sandy land. "We took two bales from Oxford, and one from Raleigh, one from Fayetteville and one from Edgefield," answered Dr. Winters, "and there was very little difference except in the length of staple. The bale from Raleigh showed a very uniform staple. The yarn was put in an end breakage test, and that from Raleigh had no breaks, while none of the others stood up that well. It is a matter of moisture. If you take some of the soil in the sand hills, the top sand soil is not constantly supplied with moisture and you do not get the body, but that is in a very limited area." Mr. Vick declared this upheld his own theory. "The clay soils," continued Dr. Winters, "will hold the moisture because they are not so porous, and then too, the soils with the proper organic matter in them are better."

This part of the discussion was dismissed by the chairman with a statement that all concerned must work toward overcoming the prejudice which seemed to exist against local cotton, and in educating the farmer, and the "commission man" to the fact that they would get more money for a better grade and staple of cotton. "I think," he said, "that most mills are willing to pay a higher price for a better cotton."

At this point Mr. Mullen said he wanted to arrive, if possible, at what could be done with a good uniform 7/8 to 15/16-inch staple Cleveland cotton in the mills of the section. He explained that in his own plant, his yarns were woven into goods, but that a majority of the mills were on sale yarn, and he understood that there was no end to the kicking on yarns made for sale. "As a general proposition," he asked, "do any of you know whether a uniform 7/8 to 15/16-inch cotton would answer for most of the mills in Eastern North Carolina?"

"Speaking personally," answered Mr. Black, "we use both the local and 'southern' cottons. In the soft yarns we use the local 7/8 to 15/16-inch up to 20s, but we found when we treid to spin up to 24s and 26s out of it, we did not improve our reputation in the market.

"A while ago," continued Mr. Black, "you spoke of the foreign mills using the lower grades of cotton. I think if their conditions were investigated you would find they do not get anything like the production we get off of the machines. Their help is more skilled, and their machines run very slow, and if we could manufacture under the same conditions, we could use the cotton we export with just as good results."

"That is what I have always understood," said Mr. Mullen. "That with their lower labor cost they could do it and get by." He brought out further that the speeds in the card room are very slow, and that the making of good yarn is made possible by the exceptionally good preparation of the roving.

Mr. Vick asked whether anybody had spun over 20s from the 7/8-inch local cotton. Mr. Black replied, "I *had* to," but repeated that his results were not thoroughly satisfactory from the standpoint of quality. He added that he is experimenting with some ball-bearing skewers which he thinks may help in reducing the stretch on the roving coming out of the creel.

There followed at this point a brief discussion as to the comparative amounts of waste taken out of the local cotton and the 'southern' cottons. Mr. Mullen recalled that Dr. Winters had reported two per cent less waste in the local cotton as compared with bales from Texas; adding that in his opinion, most of the difference in waste would occur in the picker room and through the cards. He said some tests he had made showed between two and three and a half per cent difference in waste, although the local cotton used was Middling, while the 'southern' cotton was Strict Low Middling, which naturally would have more dirt and trash in it.

Mr. Vick told of a test he had run, which showed, under the same conditions, that the waste from the 'southern' cotton, up to the drawing frame, with a one-pound lighter lap to begin with, showed about five per cent more, but the local cotton coming out on the drawing frame was very much lighter. Mr. Gurley of Rosemary said he made a test of five bales of compressed cotton, 2,520 pounds, and got more waste from that than out of the local cotton, through a vertical opener, Murray cleaner and breaker pick-

ers, but that through the intermediates and finishers he got out 45 per cent more from the compressed stock; fifteen per cent more card waste. He said he took samples of the roving from both stocks to the spinning room, without identifying them, and the local stock ran just as well as the other. "I have found some trouble sometimes with the 'southern' stock in that it doesn't drag as much, and loses weight between the picker and the speeder," he said. "I believe we can work more local cotton if we put more confidence in it."

Dr. Winters reported here of the efforts of his organization to determine just the amount of "drag" desired in cotton by the different mills. In this connection, Mr. Reynolds stated that from the drawing forward, the inch stock will run heavier and the 7/8-inch lighter, because the shorter length will draw out easier, even if they both have the same "drag."

Mr. Mullen explained that in the test reported by Mr. Gurley, Strict Low 'southern' and Middling local cotton was used.

Mr. Brietz, when called upon, declared that his mill, weaving its own goods, uses 'southern' cotton altogether, it coming from Alabama and Mississippi. "I find the greatest trouble is irregularity in the staple, particularly in the lower grades there is a lot of it."

Jim Cates asked the chairman to call on L. R. Gilbert, who, he said, was "making 30s out of half-inch cotton." Mr. Gilbert explained that he is using local 7/8-inch cotton to make his 30s, and receives no complaint about the yarn. He emphasized the point made that "if you've got confidence you can run it. The biggest thing is to believe you can and go ahead." Asked as to his spinning frame front roll speed, Mr. Gilbert brought out that this possibly helped him because he had spinning to spare and paid little attention to the actual speed he was running. Mr. Cates spoke briefly, declaring he is using practically all local cotton raised in his county, although he finds it somewhat difficult to get a "production" of 30s from 7/8-inch staple under normal mill conditions.

J. H. Bunn, superintendent, Henderson Cotton Mills, Henderson, N. C., was called upon and declared that he is making 30s out of cotton that is under an inch, and that he feels with a good uniform inch cotton, a good production of 30s is entirely possible.

"And if you want to see local cotton going into as pretty a 30s as you ever looked at, go to Mr. Bunn's mill," added Mr. Gilbert.

Concluding this discussion, Mr. Mullen said it seemed entirely practical to make up to 30s out of the Eastern North Carolina cotton, and that seemed as high as most of the yarn spinners in the section went. Before the subject changed somewhat, Mr. Hill declared, "My experience has been there is a great deal of difference in the quality of yarn from the standpoint of running only one or two numbers and running say from 12s to 30s. You can make a better quality of yarn if you are on only a few numbers, because you can go back to the picker room and make the proper ounce lap and cut the cards down light and get the draft right. And then you can get better results from a shorter cotton than you can where you are running a wide range because you are exceeding the limit one way or the other on your drafts. You cannot make as smooth a 26s out of 7/8-inch where you run from 12s to 30s as where you are making 26s alone."

Mr. Cates asked whether two or three processes of picking is best for 20s. Mr. Bunn said "we have a bale breaker and two vertical openers and two processes of picking, and we find that the work runs better using two processes, on 18s to 30s." Mr. Gilbert confirmed this opinion. W. G. Reynolds said his experience is that it is best to cut out the intermediate provided the finisher is slowed down approximately 50 per cent.

"That's to give the evener more time to work?" inquired Mr. Vick. "Exactly," answered Mr. Reynolds.

A discussion of twist in roving was next brought up. G. E. Moore said, "If you have a standard, and if your cotton is uniform, you can run with less twist. The roving should run without breaking back, and should not come 'through the rolls.' Your skewers have a whole lot to do with it. With good skewers you can run with a lot less twist. My experience is that the less twist you can run the better the spinning will be if it does not break back. As a rule, however, excessive twist is necessary in North Carolina cotton."

"Twist is a subject that few of us have studied; drafts are a thing we know very little about," declared Mr. Reynolds. "An honest confession is good for the soul, and if we do not confess our ignorance we will not learn a great deal. Why twist? To give it strength to pull it, to consolidate the fibers, to affect the bulk and volume so they may be grasped by the succeeding rollers and drawn out evenly. We must learn the why of things; we go ahead and do things by the rule-of-thumb and do not realize why we do them. By putting in more twist we consolidate the fibers, and give the rolls a chance to grasp the strand, and the emerging strand is a smaller volume and therefore the ragged edges are less and we make a smoother yarn that does spin better."

J. T. Hilton, professor in carding and spinning at the college, explained some of the work being done along research lines, urging the mills to cooperate with the school in this direction.

Reverting to the discussion on cotton staples, Dr. Winters presented the following comparative figures between a Texas Strict Middling 7/8-inch cotton and a North Carolina Middling 7/8-inch, giving the strength for three numbers of yarn, 22s, 28s, and 36s, with two twist multiples, 4.25 and 4.75. The table follows:

Twist Mult.	Texas Cotton			N. C. Cotton		
	22s	28s	36s	22s	28s	36s
4.25	87.1	64.8	47	98.74	72.75	49.31
4.75	87.8	66.6	46	96.82	71	48.34

Dr. Winters called attention to the fact that the North Carolina cotton gave a better strength with the 4.25 twist multiple, with no noticeable difference in the Texas stock.

It was voted to held each annual Fall meeting at Raleigh at the college, and Kinston, N. C., was selected as the place of the Spring, 1928, meeting of the division, the date to be announced later. This concluded the session and the meeting was adjourned.

Kindness and courtesy would be seen oftener if some people didn't mistake the former for weakness and the latter for cowardice.—*Clement Comments.*

Dyers', Bleachers' and Finishers' Division Southern Textile Association

BY ROBERT W. PHILIP.

The discussion work of the Southern Textile Association was further extended by the formation of a Dyers', Bleachers' and Finishers' Division at an organization meeting held at the Southern Manufacturers' Club in Charlotte, N. C., on Wednesday, October 12th. This now gives the association a rather complete discussion organization, as it has groups covering carding, spinning, weaving, and one for the master mechanics, in addition to this latest group.

After the organization of the division was formally carried out, there was quite a bit of valuable and interesting discussion on dyeing and finishing subjects, based on a list of questions submitted by the mills in response to the call letter of Secretary J. M. Gregg. A detailed report of this discussion will be found in the following paragraphs.

Secretary Gregg opened the meeting, outlining the existing discussion work of the Association and explaining the purposes for the formation of the finishing group—which were, briefly, to bring the men in these departments of the mill together and provide them with a means for discussing problems of mutual interest.

Paul F. Haddock, southern manager of A. Klipstein & Company, Charlotte, N. C., was selected as temporary chairman to lead the discussion at the meeting, being later elected chairman of the division to serve for one year.

The first question taken from the list by Mr. Haddock for discussion was as to the advantages and disadvantages of range finishing. The chairman called upon Richard W. Arrington, superintendent of the Union Bleachery, Greenville, S. C., to discuss this subject.

Range Finishing.

"It seems to me that possibly I might be a poor one to start the discussion of this particular question," responded Mr. Arrington, "because from a letter that I got from Gregg he asked for suggestions as to good topics for discussion and I happened to suggest this topic because I thought I would find out something about it. From my acquaintance among those present, it seems to me as if most of the men are interested primarily in yarn dyeing; there being few piece-goods finishers here. My experience has been entirely in the piece-goods end, and this is a problem in piece-goods finishing.

"As I see it, there is a good deal to be said on both sides, as to whether or not range finishing on piece-goods is a good thing. I believe Mr. Heldman over there uses it entirely and perhaps could tell you more about its use. In my particular plant we use it not at all. It seems to to me that our two types of plants are representative. Mr. Heldman handles only his own goods from his own mills and does no commercial work. In our case we do entirely commission work. In Mr. Heldman's case it seems to me as if range finishing is a wonderful thing and is probably the only way to do his finishing because he has a standard product. I do not know whether you gentlemen know just what is meant by range finishing. The tendency today, instead of having individual units of a scutcher, water mangle, starch mangle, set of cans, a tenter frame, and calender, as separate units is rather to hook all of these up in one range and run the goods through them all without stopping.

"Mr. Heldman has a standard product, as I say, and has practically the same thing every day; he knows what he is to run each day, he has so much yardage of certain fabrics, and the number of fabrics is comparatively few. My case is exactly opposite. I never know what I am going to have to run. I might have a little lot of 1,000, 2,000 or 5,000 yards of one thing and have to change to another. Personally, I feel that in a case like ours, range finishing is hopeless. Why, even on the same fabric, sometimes, we must change the starch; you might be running a 64x60 for one man who wants it for a cambric or muslin finish and another man will want it firmer. Doing only commission work, range finishing to a large extent is almost impossible, and that is why I wanted to find out if it could be worked out to advantage in the finishing plant. It is cheaper, there is no question about that. If you have long runs you can hook up and run it all together and use less labor. Don't you use five men on your range?", he asked of J. M. Heldman, bleachery superintendent, Erwin Cotton Mills Company, West Durham, N. C.

"It's about eight men", replied Mr. Heldman.

"Well", replied Mr. Arrington, "if you use eight men I would think you would get by with less than that. With the machines run separately you could get by with ten men, yet this is one advantage in range finishing, you cut down on the number of men you use. Another advantage is, if you have a big run you will get a considerably larger production; if you start up a line of machines and run them continuously you will get a greater output." Among the troubles that might come up, Mr. Arrington suggested the possibility of seams coming loose, bluing not right, can spots, etc. "There is a great deal to be said on both sides," he concluded, "and we are coming to learn something about it."

Mr. Heldman was called upon to discuss the subject. "As Mr. Arrington said," he replied, "we are on range finishing entirely. We have three different constructions, but all receive the same finish. We are not bothered with changing our starch mixing and so on. I said a while ago we use eight men. It is actually seven—two of these men, however, are on the double doubler; we have one man to operate the water mangle and starch mangle, that is one man's job; we have one man to watch the cloth as it goes to the tenter frame (on wide goods, as you know, you have trouble with biased goods). Two men are on the frames. We have considerable trouble with seams breaking and spots from the chain, and these men operate the frames and the dry cans. We have one man operating the calender and sprinkler, and from there it goes through the double doubler. We have two men there and do our inspection work there between the calender and the double doubler, one man calls out the imperfections and one man puts stickers on for the imperfections. We have a row of lights just back of the goods so he can see the imperfections.

"In our case there is a great saving in range finishing. There are some disadvantages. If we have a cloth that is injured at the water mangle it is pretty difficult to catch it until it gets down to the end where it is inspected ahead of the double doubler. In this case we have considerable

damaged cloth before we can see it; also grease will get on the goods from the tenter chains, we have trouble there as I imagine everyone does. We run through from the chains to the cans and we cannot see it until it gets to the J-box just before the calender, and we have that much damaged cloth. If a spot gets on the cans it gets on the cloth every time it turns over. That is the main disadvantage in range finishing, but taking into consideration the production and labor saving we feel it is to our advantage to use range finishing. Our constructions are 56x56, 64x64, and 72x72, from 42- to 90-inch sheetings."

"Well, not counting the men on the double doubler, you really run the range with five men?", asked Mr. Arrington.

"Yes, sir", replied Mr. Heldman.

"Then that is about one-half saving in the labor, I believe," declared Mr. Arrington, who continued, "Isn't another disadvantage that when there is trouble every machine is standing?"

"Not all the time," replied Mr. Heldman. "We have J-boxes before the straightening machine, and we try to keep enough cloth in the J-boxes to run the succeeding machines. In our case we are crowded for room, and we have to stop more than if we had another J-box. We have another J-box in front of the calender, so when a roll is taken off the rest of the range will not have to stop."

"Is that a pure finish or back-filled?", asked Mr. Arrington. Mr. Heldman replied that they run both, and that they have a Tommy Dodd and a pure mangle right in the range and use whichever one is desired, depending on the work being run. Mr. Arrington asked whether the J-box did not break up the finish, and Mr. Heldman reported very little trouble in this respect.

The chairman next called on H. A. Woodhead, vice-president and superintendent, Gregg Dyeing Company, Graniteville, S. C.

"On the question of range finishing," replied Mr. Woodhead, "it seems that Mr. Arrington and Mr. Heldman have covered it pretty thoroughly. Probably both of them know a great deal more than I do about it. Our work is almost exclusively sulphur khakis, including drills and twills and some coarser sheeting 30- to 39-inch. Originally, the plant, built in about 1924 by J. E. Sirrine & Company as engineers, was laid out for about as complete a range operation as any plant could be—it is something like the modern method of assembling automobiles on a continuous line. However, we had to make some changes for the reason that it was found impracticable to follow out the original ideas. They originally were going to finish a few numbers in three or four shades, and confine themselves to this method of operation, and the original lay-out was to sew the goods in the grey room, and run them in a continuous piece over the brusher, singer, desizing, scutcher and dry cans and prepare them for the dyeing. That was the first range. The second range would take the goods which were folded down in trucks and put them over another range which contained the dye padder, oxidizing, wash boxes, chroming, dry cans, starching and another drying and the Simpson winders. Since then we have broken that up in several places. We now have a pause after the de-sizing. The dyeing range is the same. I often say that I wish we had more breaks.

"If we could confine ourselves to a few numbers and a few colors it would be ideal to start in the grey room and take the goods through the whole range. I believe it thoroughly practical by confining yourself to the same style of goods and a few colors, but it seems that there is so much sales resistance that it is best to give the buyer what he wants rather than what you want to make for him. However, we have as few numbers as any commission plant has and yet we find it very difficult to use the complate range idea."

"In other words," said Mr. Arrington, "as you get away from the few standard products and colors, it becomes more desirable to split up the ranges, and the further you get the more necessary it is."

Mr. Woodhead agreed, stating that it was necessary for him to make the range more flexible to take care of the increased number of styles and colors.

"Do you believe there is a middle ground where you can accomplish all purposes?", asked Mr. Arrington. "Say in running the water mangle and starch mangle together. I have found in doing that that where I formerly used three men, by rigging them up I could run them both with one man. You possibly can rig up other groups."

Paul F. Haddock, Chairman.

"All of our dyeing, except the blacks and blues," said Mr. Woodhead, "is done on a range. The goods are padded, oxidized, rinsed, chromed, washed and dried, but not starched, in one operation. The dyeing is all done that way. It takes one man at the entering end, one range walker and one doffer on the other end, who doffs two ranges which have a combined production of 90,000 to 100,000 yards a day. It takes five men for the dyeing operation in addition to a couple of dye mixers to keep the 400-gallon kettles full and make up the various batches. It would be impossible to get off that production in any other way except by range dyeing."

"Many years ago," said Chairman Haddock, "I was connected with the American Finishing Company, in Memphis. That plant was put in for finishing bag goods for the American Bag Company. They had a range there where the goods came from the white bins to the scutcher, water mangle, dry cans, small calender, Scotch mangle, set of dry cans and Simpson winder. The mangles were interchangeable for either pure or back-filled work. We found that range to be very satisfactory. We operated it with three men, one on the water mangle and starch mangle, one range man and a doffer. We had no trouble with our

regular work, but we ran into the same disadvantages that have been mentioned when we got onto other kinds of work. Finishing a 9.50 bag goods at one run is difficult enough, but we had some other work come in, and it was very simple, but we had nothing to do it with. It seems to me that if a man is doing job work he must have individual units, and if he is on his own work, he can use range finishing," said Mr. Haddock in concluding the discussion on this subject.

The next question taken from the list asked "What are the best methods of piece-goods mercerizing?" It developed that while a number present process warps and skeins in mercerizing plants, only one man, Mr. Arrington, has been mercerizing piece-goods. The only query brought up under this head was from B| F. Mitchell, superintendent, mercerizing plant, American Yarn & Processing Co., Mount Holly, N. C., who asked Mr. Arrington how he manages to get the proper tension for mercerizing on the width or filling of the cloth as on the length of warp yarn. Mr. Arrington explained that he has the usual methods for tensioning, but has experienced no difficulty as to difference in mercerization in the warp and filling which had ever been brought to his attention.

B. F. Mitchell.

Cooling and Conditioning Piece-goods.

The chairman next asked for discussion on methods of cooling and conditioning piece-goods. He opened the subject by pointing out that in this country there has been comparatively little attention given to this question. On the other hand, in England, he said, it is a customary practice to have a cooling room for the cloth, in which the goods are left sometimes as long as two or three weeks.

"Well," ejaculated Mr. Arrington, "what do they do about deliveries; it's obvious that they do not do work for New York converters."

Mr. Haddock continued the subject by stating that "recently there have been several stock machines brought on the market for this purpose. I know of one place in the South where they operate the Sjostrom machine behind the continuous range. Any bleacher knows that on goods properly cooled off you can get a more permanent finish that will stay on, while when they are taken right off of the hot cans, the finish is subject to lots of changes."

Referring to the machine mentioned by Mr. Haddock, Mr. Woodhead stated that he had tried one for several months but had discontinued the use of it because for his particular work it did not seem to be advantageous. He said in one case he encountered a blue that required the cooling, but he deemed it more advisable to change to another blue than to operate the additional apparatus. However, he added, "on the other hand I know of people who are using it and getting very good results from it; in fact it seems they could not get along without it." He said later that for a calender finish it would seem to him to be essential.

Mr. Arrington said Mr. Woodhead's report was very interesting, "because I thought I was the only one in the world who had had that experience." Mr. Arrington added, on the other hand, that "some method of cooling is desirable. Some of the goods may be coming from the cans hot, and some of it may lie overnight, and you sprinkle it and naturally the water will not have the same effect on it. Some method of uniform conditioning is very desirable." It was brought out that an advantage of using such apparatus would permit expediency in completing orders within a shorter period of time.

Uneven Dyeing.

"Causes of uneven dyeing" was the next topic brought up by the chairman, who indicated that the rest of the meeting might be devoted with all ease to a discussion of the many different things that would cause this trouble. He desired, however, to bring out some of the main general points, and called upon E. P. Davidson, laboratory manager, E. I. du Pont de Nemours & Co., Charlotte, N. C.

"That is a subject that can't be settled in five minutes' time," responded Mr. Davidson, adding that usually it is a case of finding some different cause in each particular instance. Taking up the main causes, he said, "I suppose to begin with that one of the causes is the use of dyestuffs not suited for the particular work you are doing. Again, there are certain colors that will work very well by themselves or in combination with certain other colors that will not work in other combinations. Again, in some cases the dyeing machine has something to do with it, the rolls not being lined up properly, etc. On certain other types of machines for yarn dyeing, sometimes you do not get a sufficient agitation. Sometimes the machines are overloaded, when you try to dye more in them than the machines are supposed to hold. As I say, there are any number of causes. It is usually a question of going into the particular problem in mind and trying to find out what is causing it in that particular case. It may be any one of the whole list of causes or it might be a combination of several of them."

J. E. Williamson, superintendent, Highland Park Mfg. Co., Mill No. 1, Charlotte, N. C., at this point asked the question, "What is the best method of 'feeding' dye on long chain warp dyeing?"

G. O. Kluttz, overseer of dyeing at the Salisbury Cotton Mills, Salisbury, N. C., was requested by the chairman to answer this, adding that Mr. Williamson probably wanted a method which would "give an even shade with no seconds."

"The only thing I can say is about the first thing is to keep the warps boiling and keep it at the same temperature, and then proportion the dye out and feed the amount you need for that run, just in proportion as it runs out, keeping it level. We have had no trouble doing this. It is just a matter of careful temperature, having the same temperature all the way, and then careful feeding."

G. O. Kluttz.

T. C. King, overseer of bleaching and finishing, Cramerton Mills, Cramerton, N. C., said he had solved this problem with a mechanical means of regulating the dye. Referring back to the question as to the causes of uneven dyeing, Mr. King added that "if any man who has uneven dyeing will examine his work, he will find that, whether it is yarn or piece-goods, it is caused by the goods not having been properly prepared to receive the dye. In some rare cases the dyes are not satisfactory, but most of the time it is due to the lack of proper preparation."

"I agree with Mr. Davidson and Mr. King," added the

chairman. "The first thing is to properly prepare the goods so they will be penetrated; next is the proper selection of the dyestuffs, with the proper solubility, that will work together and exhaust together.

"From a mechanical standpoint, a careful selection of machinery is essential. In oxidized colors that is another thing that can be determined only by the results secured. I think you must thrash it out in each individual case. When you can see the goods and examine the results you can determine the cause."

Preparing the Goods.

The next question asked for the proper chemicals to use for boiling out. Mr. King and Mr. Arrington here brought out that the interests of the men present were so varied, covering raw stock, yarn, and piece goods, that it would be difficult to recommend any specific things that would apply generally. Mr. Arrington also made a suggestion regarding the possible sub-division of the group according to the products, which was taken up later in the meeting. Mr. King was asked his opinion as to the best method of boiling out yarn, and he brought out that it is necessary to have some chemical in the kier to bring the oils into solution, and then something to keep them emulsified to prevent oil spots. Mr. Mitchell, when asked to discuss the question, explained that in warp range mercerizing, the work is put through so fast, that going through two to four boxes at 18 to 25 yards, a boil-out was hardly secured; that it really amounted to a good wetting-out. Mr. Arrington was asked for his preference in boiling out piece goods.

"Personally," Mr. Arrington replied, "I feel that there is only one thing to use—I hope I will not step on anybody's toes when I say this—and that is caustic soda. I personally do not think that anything else is necessary; I think anything else used is a waste of money. I have tried any number of things and could not find where any of them did any good. I am a strong believer in preparing the goods properly before putting them in the kier. Some people desire a wash. In our case we steep overnight in hot water, which gives the starch and sizing materials a chance to soften up and ferment. We want it to stink, and the more it stinks, the better it is. Then we give it a wash and a grey sour in sulphuric acid and another wash before putting it into the kier, so the goods are in fairly good shape; and we feel we have got out most of the foreign matter that was put in at the mills. Also, on piece-goods, I am very much sold on the kier piler. I think it is the biggest help to get away from stains coming out of the kier. You probably couldn't use it on yarns, though. It is a wonderful help in getting a uniform cloth. We haven't had, in our plant, in four years a single yard stained that had to be re-boiled, and I attribute it to exercising care and the kier piler.

J. M. Heldman.

"As to the chemicals used, I know very little about chemistry, I am not a chemist, but I feel that anything other than caustic soda is a waste of money."

Someone asked Mr. Arrington if he used the caustic soda on vat colors, and understanding him to mean on goods to be dyed with vat colors Mr. Arrington replied in the affirmative, but when the man explained he meant after the yarns had been dyed with vat colors, he corrected himself: "No, sir!"

The chairman pointed out that Mr. Arrington was referring to gray sheeting, drill, etc., and that if he had been talking about knit goods to be dyed and bleached he probably would not use the caustic soda. Mr. Mitchell added that yarn for mercerizing would not be boiled out with caustic.

Marshall Dilling, superintendent of the A. M. Smyre Manufacturing Co., Gastonia, N. C., attending the meeting as a fine yarn spinner, at this point brought up a question from his standpoint for the consideration of the finishers.

"For the past two or three years," he said, "a number of us spinners have been bothered with the problem of certain kinds of cotton that would stick to everything they came in contact with, particularly around the combers. We later found out that it was supposed to be an alkali on the cotton, as a result of the locality in which it was grown. I had this trouble frequently, especially on Monday morning; I couldn't get the card room started up. I would try to start it up on Monday morning and one time it was two o'clock Tuesday afternoon before it got going. The way I started it was to open up all of the windows and let the air come in and in the meantime the sun had come out and it put the room in a condition in which I could start up.

W. R. Wells.

"Some time after that we were making some yarn for a mercerizer, and he called me to his plant about some of the yarn having weak places in it. When I got there I talked the matter over with him and he said, 'We are using this yarn from four spinners and three of them all went bad at the same time.' That made me wonder if that was the fault of the spinner or the mercerizer. It seemed unreasonable to assume that the work of three out of four spinners would go bad at the same time. Was there something in the cotton that was giving the trouble. This same mercerizer reported this trouble of weak yarn again later, and I went to see him. After I had been there about an hour I saw five other mill men coming in. They had called all of us there together to go into the trouble. Was there anything in the cotton that mercerizing would have an effect on and make weak places; was it that alkali in the cotton? Now some of these questions may sound foolish to you, but they are not to me because I am asking to learn. One of the men I saw told me he had changed from Mississippi to South Carolina cotton and just as his yarn was going into this plant it went bad on him. If we spinners are to blame we would like to know of it, and if there is something we can do to help it we would like to do it."

"I think Mr. Dilling is referring to single yarns", declared W. R. Wells, superintendent, The Elmore Company, Spindale, N. C. "I happen to be a processor of that kind of yarn and we have had quite a bit of trouble with yarn of that kind going bad. I would like to say here that the mercerizer has his troubles just the same as the spinner does, but if the yarn is being eaten up by sulphuric acid, he can tell it readily, or if there is some other cause in his plant he can determine it, but it is difficult to tell in the spinning.

"We have used yarn with this same trouble, and in tracing this back we have found that the trouble was caused by places in the yarn with no twist in them. The winder hand can tell better than the overseer what the trouble is. We have found it is probably due to a weather condition or the cotton being spun so that there are places without twist in them, and not in the mercerizing. If we knew of a place in mercerizing that caused a weakness we could readily detect it. We have noticed that trouble in single yarn with no twist or slackness. It will break back every time."

The chairman asked Mr. Mitchell whether he did commercial work, and he replied that "we mercerize our own work as well as do work for fifteen or twenty other mills, and I do not think this trouble is in the cotton at all. If the yarn is uniform, with no thin and thick places in it, and has a uniform twist, I do not think the trouble should occur." He expressed the opinion that the alkali on the cotton would have no injurious effect whatsoever in the mercerizing process.

"We had them send some of the gray yarn back to us," continued Mr. Dilling. He said on this certain kind of yarn that "on his skein winders an average of forty pounds a day was a good production, after it was mercerized. We went ahead and put on eighty pounds a day in the gray so that didn't make it look like it was in the yarn."

"The reason the gray yarn ran so much better than that which had been mercerized," explained Mr. Wells, "is that there is a great contraction, especially in single yarn, in mercerizing, and the contraction gave it more of a tendency to break at the weak places."

"Why do some dyes weaken yarn more than others?", was the next question asked by the chairman.

Weakening Yarn in Dyeing.

"The only thing I know of is leaving the chemicals in the yarn after it has been dyed," responded Roy Nanney, overseer of dyeing, The Elmore Co., Spindale, N. C. The chairman then called upon W. R. Ivey, demonstrator, E. I. du Pont de Nemours & Co., Charlotte, N. C.

"The biggest fault," said Mr. Ivey, "is in the goods not being properly cleaned. A great many dyers attempt to wash goods down in two short cold washes. The water looks clean and they assume the work is accomplished, but if you will put in one hot wash you will find the cold water did not do it properly, particularly on sulphur colors."

"I think the man who asked this question must have had sulphur colors in mind," declared the chairman. "Most people do not wash sulphur colors enough. I think it would be time and money well spent to wash them thoroughly and preferably give them a good hot wash.

"Of course, however, we cannot blame the dyer altogether. Sulphur black has always had this tendency and the dyestuff manufacturers have never found out just what does it. As a matter of fact, once in a while you will find a barrel of sulphur black that has destroyed itself; sometimes heat will start in the barrel and burn it up, and the same thing applies to the yarn." He told of an experience he had witnessed where a shipment of goods containing some sulphur blacks were sent to market, and returned, and the blacks were tendered but the others were still up to strength.

Mr. Wells told of a case at his mill where an employee had made a shirt from some cloth which had a gray warp and a filling dyed with a jade green vat color. He said after a while the man brought the shirt to him and the filling was all rotted out. He said the conclusion he drew was that the employee had probably taken some scrubbing powder to wash the shirt and failed to rinse this out, and this had caused the tendering of the shirt.

The chairman here touched upon the need for closer cooperation between the mills and the laundries. "A manufacturer will guarantee fastness to this, that and the other, he said, but it cannot be expected to hold good when the pieces are put through the laundry. I saw some goods last week dyed with vat colors, that went to the bleacher for bleaching in the piece. Every color was shipped out, and went to the New York market and were sold, and from there to the laundry, and the vat colors were absolutely ruined; the vat colors bled, and still the laundrymen tell us they never use caustic!"

Dyeing Rayon Yarn.

"What is the best method of dyeing rayon yarn in skeins?", was next asked by Mr. Haddock.

W. N. Pharr, superintendent, Hartsell Mills Co., Concord, N. C., answered this: "We have tried both the hand and the Smith Drum machines and we are using the machines altogether now. We had quite a bit of trouble getting started on the machines, but now we get a much more even color than by hand." Answering a question from Mr. Williamson as to the difference in labor cost, Mr. Pharr said the machine method is about 60 per cent cheaper.

"How does the winding compare with the hand dyeing?", was asked.

"That is something everybody has more or less trouble with," answered Mr. Pharr, "but we think we have overcome that and it winds very good, even as good or better than it did from hand dyeing. We use direct colors."

R. H. Webb, overseer of dyeing at the Hartsell Mills Co., supplemented Mr. Pharr's statement by adding that while they had some trouble in the winding, " I believe that proper lubrication of the yarn will take care of that." He asked as to the advantages and disadvantages of using mineral oil for soaking the rayon, but there was no discussion on this.

"The Smith Drum machine has an advantage over the hand dyeing," declared J. L. Lancaster, overseer of dyeing, Margrace Mill, Kings Mountain, N. C. "It keeps it in motion and makes it more even."

"What causes yarn in skeins to turn wrong-side out?", was next read by the chairman from the list of submitted questions. Mr. Wells answered this by saying that on a machine the principle is the same as handling the yarn by hand, if the yarn is twisted to a certain angle it will turn wrong side out."

Kier Boiling.

The discussion reverted back to bleaching at this point when the chairman brought up the question of the comparative merits of the one and two boils in bleaching.

"We are using the two boil method," responded Mr. Heldman, "and we find we get a very even bleach. However, I do think that we can do it in one boil. We have had some experiments with one boil turn out very satisfactorily, but recently we have had some trouble with our water and have not carried our experiments any further for the time being on that account.

"We boil two boils with a pressure of about 20 pounds, 13 hours for each boil, and we find by doing that we have an even bleach. We do not use a kier knocker. There is a tendency on the part of the man who is doing the knocking to knock it in piles, and if you have that you have

hard and soft places in the kier and the liquor will circulate around the hard places. This is overcome by the two boils, but as I said, I think we can do very well with one boil. Mr. Arrington does his bleach in one boil.

"We use caustic in both boils. We wet it out in the kier for the first boil, after we sour it in sulphuric acid and wash it back into the kier. The same goods are on top in both boils. It would be an advantage if we could bring it out of the first boil and wash it and sour it and run it back into the second boil, because we would be turning the goods over, but the way we are situated we cannot do that, as we must put the same end on top in both boils. We take the gray goods right from the bale to the kier."

"The bleachers in the South are pretty well divided on the one and two boils," observed Chairman Haddock. "A lot are doing the one-boil bleach, still a few use the two-boil bleach. The people who are doing one-boil usually give the goods a pre-treatment by wetting and steeping the goods, getting rid of all starches and sizing compounds, while the two-boil people, most of them, run it straight through in the kier, so that it practically amounts to the same; both are a kind of double treatment."

The question of penetration materials, soap, softeners and dye assistants was brought up by the chairman but was not discussed. With the practical discussion feature concluded, the meeting went into business session and elected Mr. Haddock as permanent chairman to serve for the first year. Mr. Haddock accepted with the understanding that he would appoint mill men to conduct the discussions, as being in the dye and chemical business precluded his holding office and participating in the discussion at the same time. At the luncheon which concluded the meeting, Mr. Haddock announced that he had appointed a committee of five, each man to cover certain phases of the work of the division, to work with him in conducting the next meeting. These appointments were: Piece goods and yarn bleaching, Julian Robertson, N. C. Finishing Co., Yadkin, N. C.; warp and skein yarn mercerizing, B. F. Mitchell, American Yarn & Processing Company, Mount Holly, N. C.; raw stock, yarn and piece goods dyeing, T. C. King, Cramerton, N. C.; dyestuffs, chemicals, etc., J. L. Dabbs, E. I. du Pont de Nemours & Co., Charlotte, N. C.; dyeing, bleaching and finishing machinery, Fred H. White, Charlotte, N. C.

Labor Problems

BY LUTHER H. HODGES AND HARRIET L. HERRING.

The article below is one of a series which has to do with the fundamentals of business, or, more properly known as Industrial Economics. These articles are being published from month to month. Each one is a unit in itself, although forming an integral part of the entire series.

Practical mill men like practical material and these articles are designed to meet the needs of textile operating executives who are interested in knowing more about the laws governing business and industry. The entire series has already been used by a large cotton mill organization in the South in its educational work, and this organization found the material to be very practical and effective.

Each article lends itself to discussion by groups of mill men, as well as being helpful and interesting reading. Naturally the articles are brief and in attempting to cover this large field, only the most important points have been considered.

The problems of labor are among the most pressing problems of the community and the modern state. The huge number of wage earners of the factory system makes its problems big if there was nothing to complicate it. On the other hand, the employer finds that he is regulated by law in matters of child labor, hours, women employees; by unions in matters of wages and strikes and apprentices; by public opinion in general labor policy.

And in addition to these two sides we have a broader view—the view of the community as a whole. Labor problems are no longer purely the concern of the worker and the employer and the inside of the plant. They are matters of importance to all as members of a public that is elaborately inter-dependent for its well-being, economic and otherwise, upon the well-being of every individual in it. Unemployment in one industry makes its workers unable to buy the products of another and depresses it. Poor wages, bad working and living conditions lowers the health and standards of workers and so affects the whole community.

Origin of Labor Problems.

Labor problems in their present sense had their origin in the modern factory system. Our study of earlier economic systems showed that labor was also capitalist and manager, or else serving an apprenticeship that would eventually lead to the ownership of his shop and tools and finished product. As an apprentice, he could not quarrel much if he was getting good training; as a journeyman he was on a fair way to becoming an owner; as owner he did not have to divide his rewards into (1) wages for his own labor, (2) profits for his enterprise in managing apprentices and machines, and (3) interest in his investment in tools.

But, with the division of these functions we have one class whose interest is in keeping wages as high as possible because that is their only form of return from the business, and another whose interest is in keeping labor costs down because it takes from their profits. With the large outlay now necessary for manufacturing, it is harder to rise to ownership and the average man has to look forward to a life as wage earner. In many countries, and to an increasing degree in America, he has come to expect it for his children also.

As a result, we have two classes which feel a certain antagonism toward each other. They feel that they have a special group interest and that it is opposed to that of the other group. This class consciousness is based upon a certain amount of fundamental difference in interest and it is foolish of students of economics and of society to pretend that their interests are identical. "It is equally incorrect to assume that employers and employees have *everything* in common and to assume that they have *nothing* common. . . . . It prevents that search for the definition of the problem that is the first step towards its solution."—Roberts.

Some Present Day Labor Problems.

Unemployment is plainly a problem of the economic or-

ganization of society because so much unemployment arises from conditions over which the individual has no control, such as changes in manufacturing methods, seasonal fluctuations, and business cycles. The modern worker is unlike the worker in any other age in his freedom of action in regard to place, job, trade, or way of living. But he has bought this freedom at the price of his security. He is hired from day to day and almost from hour to hour. His employer does not feel the permanent sense of responsibility toward the man who comes and goes at will that the slave owner or the manorial lord or the master craftsman felt toward their workers. Thus the blessing of freedom and individual responsibility with its influence on initiative has the disadvantage of the constant fear of loss of a job.

Some of us have so much faith in America as a land of opportunity that we declare that every one who wants work can get it. Yet reports show that "there were three million fewer people employed at one time in 1921 than in 1920,—that in cities the army of the unemployed ran from 10,000 in medium sized cities to 160,000 in Detroit. . . . . that in 1914 there were 500,000 men unemployed in New York City alone."—Roberts. In the last few years the working force in many southern cotton mills has varied from 10 per cent to 50 per cent within a few months, and many closed entirely at times. Statistics covering many years and practically the whole country show that there are always about a million people out of work in the United States. In bad years or dull seasons this number doubles and trebles in short order.

The effects on the worker and on society are many: Loss of wages; using up of savings; piling up of debt; loss of skill from lack of practice; loss of the habit of regular work and the creation of floaters; undernourishment due to scarcity of food or the use of cheaper food; neglect of health because of lack of funds for attention at the proper time; loss of confidence and self-respect so that many beg or commit petty crimes from which it is hard to come back to honest living.

All these are evils not only to the individual but to the social order as a whole. Therefore, preventing unemployment is a problem that needs the greatest cooperation. Workers must learn to save some of their earnings so that when work is interrupted they do not so completely change their buying habits that other businesses are upset. Managers must study marketing and try to spread the peak of seasonal demands into the seasons when demand is small, as the Dennison Company has done. Enterprisers with resources must be found with faith enough in the future to carry on needed construction in dull times. Taxpayers must be willing to see public money spent in dull seasons for public work—when in reality it buys more anyhow. Trade unions must be willing to accept decreases in wages in order to make continued production possible in depressions. The consumers must cooperate in buying as many things as possible ahead instead of waiting till the last minute—for example early Christmas shopping and buying coal in summer. Employment bureaus under some sort of public control and part time for the whole force instead of reduced force are aids. In fact all the above mentioned methods have been tried in individual localities or plants. They need to be extended.

Industrial Accident and Disease. With the harnessing of great powers to machinery and with the safety of so many fellow workers dependent upon the skill and care of each other, it is not strange that accidents should be a problem. It was estimated that in 1913 there were more than 25,000 fatal industrial accidents among American wage-earners and about 700,000 injuries involving disability of more than a month. Labor Age says that 394 miners were killed in the first four months of 1924, that 25,000 were killed in the last ten years in the United States; that 28,000 are seriously injured annually in the mines of Pennsylvania alone.

To accidents we must add the injuries incidental to trade processes. Some of these are manufacturing of white lead, glass polishing, poisoning due to certain chemical processes in tanning, hat making and furriers' trades. The poisoning from ethyl gasoline has within the year been on the front pages of the newspapers. Many dusty or highly humid trades are injurious in the long run if not so in a spectacular way.

The older method of dealing with this problem was to leave prevention up to the employer and when injury did occur to leave compensation to the process of common law. Most states and countries are now defining a minimum of prevention in regulating dangerous trades and in safeguards so that all competitors have to meet the same conditions. Many set the amounts of compensation that shall be due in case of injury.

Hours of labor ceased to be a matter of personal choice when power was applied to the machine. The early agricultural rule of "sun to sun" carried over into industry was found to be too exacting in monotonous, indoor work. Twelve hours, then ten and in many trades at present eight have been the stages of decrease, and Lord Leverhulme, a successful soap manufacturer in England, was an advocate of the six hour day. Within certain bounds the shorter day is more productive than the very long, but in some kinds of labor, especially where the speed of the machine determines the output, shortening the hours cuts off a proportionate amount of product. From the point of view of the economic good of all, when hours have been reduced to meet the needs of health and recreation, further reduction means just so much less for all to partake of. At present the textile industry, which is an example of production determined by machines, is the scene of a fight in hours. New England mills with state laws permitting shorter hours than in the South will probably make a desperate effort to be put on a basis of competition with the South.

Working Conditions. The problem of working conditions is not as great as it once was. In the earlier days of factories, bad working conditions were the rule. With regulation and public opinion and general enlightenment, the worst has passed away. Larger and better known concerns pride themselves on good working conditions and make their high standards a matter of advertisement. But there are many small factories and work places which altogether employ a large per cent of the workers that have ill-ventilated workrooms, dirty surroundings, out of date processes and unsanitary practices quite out of harmony with present day knowledge.

Child Labor. This also was formerly a labor and social problem of the first order because of its inhumanness and cruelty and because of its influence on the later productivity of the child and his poorer value as a citizen. Although, as far as industry is concerned, it is no longer extensive to a harmful degree, we are usually in the midst of an extensive campaign for greater governmental control.

Women Labor. Regulation of hours and conditions of work for women have long been common. This has grown out of the feeling that they needed greater protection than men and that their importance as mothers warranted public control. Night work, jobs involving heavy lifting, provision for seats are among the matters regulated. Some of the more far-seeing friends of labor, however, have contended that what is bad for mothers is bad for fathers and that our progress would be more intelligent if based on common sense and science and less on an emotional appeal.

Housing. With the United States a million houses behind its needs, it is obvious that the persons least able to bid high prices will go most inadequately housed. One of the results has been for many and varied industries to go into housing schemes—a plan formerly used mostly by southern cotton mills and the more temporary mining industry. We have already touched upon some of the economic, social and community problems connected with employer housing.

Wages. We shall have an entire article on wages but it should be at least mentioned here in a catalog of labor problems for it is one of the greatest. The relation between wages and the cost of living, wages and the standard of living, minimum wage, methods of wage payments are phases of the question, with the addition lately of the problem of old age pensions and unemployment insurance.

Disputes. Differences of opinion over the foregoing matters and the thousand and one details concerned with them result in disputes between employer and employee. Of late years these discussions and the action proceeding from them have assumed such proportions as to affect the entire country. The study of the causes and prevention is really a study of Unionism.

Unionism.

Unionism grew out of the fundamental labor problem of how to secure to the wage-earner some control of the conditions under which he works. Labor is not a commodity but it has many characteristics of commodities. It is highly perishable, and is subject to the laws of supply and demand. The characteristic that complicates it and makes it desirable to the worker that he be able to control the conditions is the fact that it has to be delivered in person. The seller of commodities has no interest in when, or how, or where the purchaser uses them, but all these are vital questions to the seller of labor. Again, the worker has for sale only one unit of a highly perishable article varying in price while the employer buys many units of this article so that no one unit is indispensable to him. This makes for tremendous difference in bargaining power which labor has sought to lessen by uniting.

Early unions were small local affairs devoted to their special interests and formed in only a few trades—printers, shoemakers, carpenters, tailors and mechanics. In 1827 several trade unions associated in Philadelphia. By 1850 local trade unions were united into state federations and later into a national one. In the 1870's and 1880's national unions regardless of trade lines attempted political action as Knights of Labor. The failure of this movement has been a lesson to American unionism to steer clear of direct political action, a policy that it has consistently followed ever since, and instead bargains with political parties for what it can get. Especially has this bargaining been the policy of the A. F. of L. Formed in 1886, the American Federation of Labor had 4 million members in 1921. The Railroad Brotherhoods, the Amalgamated Clothing Workers of America, and the Industrial Workers of the World are the chief groups outside the A. F. of L.

Craft Unions are made up of wage earners in a single occupation as engineers or glass blowers.

Trade Unions unite the various unions in a geographical area.

Industrial Unions are organized on the basis of industry instead of craft, including all the skilled and unskilled workers concerned in turning out a single product, as mine workers, and clothing workers.

Labor Unions seek to organize all workers by localities and then throughout the country. The I. W. W. is the most important of this kind.

The aims of unionism are as varied as the type of organization. Some are business unions mainly concerned with making the best possible bargains for wages, hours and conditions of labor. Some of these business unions have added, and others are formed mainly for, mutual benefit, insurance, cooperation, profit sharing, etc. Still others are revolutionary in aims, hoping to replace the capitalistic system with some other, as socialism or syndicalism.

Effect on Legislation.

As mentioned before, American labor has not taken direct political action as a party, but through its influence in other parties has brought about a great deal of legislation. The failure of this latest political effort—the La-Follete movement in 1924—will probably have the same effect as the Knights of Labor movement in discouraging for some time direct action in the political arena.

Collective Bargaining.

This phase of the work of the union is the effort to overcome the single worker's disadvantage in bargaining with the employer. His weak points are lack of knowledge of the labor market, lack of skill in bargaining, the relatively greater importance of the job to the worker than of the work of any one worker to the employer, and the fact that since he lives by his wages from week to week he is not often in a position to wait for a better chance. All these are modified by uniting so that the labor of the whole group is quite important to the employer, so that they can have specialists to bargain for them, and so that they can build up a fund that will enable them to live through a wait or a strike till a better bargain is made.

One disadvantage is the union's insistence on uniformity, so that the initiative of the employee is stifled, as is the will of the employer to adapt circumstances to special cases. As far as society is concerned, collective bargaining carried to its logical conclusion of the closed shop has the effect of compelling all workers to be members of the union. When unions restrict membership and apprenticeship, they become a monopoly which is bad for society just as is any other form of monopoly.

Strikes are the main weapon of labor organized or unorganized and are as old as history. The Israelites' strike against Pharoah is an early example of the unorganized strike, or popular uprising, while the labor demonstration recorded in Acts 19 sounds much like the strike of an organized craft of silversmiths. The strike as a weapon is mainly effective if public opinion is with the strikers unless the union happens to be in so strong a position that it can force its will on, not only the employers, but on the state as well, as in the case of the railroad brotherhood fight a few years ago.

Sympathetic strikes of workers in allied trades or shops having no grievance of their own have never had the back-

ing of public opinion. Sabotage, organized soldiering, "ca' canny"—forms of striking on the job, while no doubt still carried on are no longer in favor with the older, more established unions.

The boycott is a weapon of labor that they took over from consumers. Since 1908 with the Danbury Hatters' Case, boycotts have been considered illegal and labor has emphasized the reverse side of the boycott—the union label.

The Employers' Side.

These various weapons of organized labor have been met by employers with organizations for fighting the unions or of treating with them, so that they are organized in the same general groups as their employees. The strike is met by the lockout, the boycott by the blacklist. Lately development on the part of employer has been toward welfare work, benefit funds, service pensions, and other methods of forestalling labor demands. Company Unions have been, in some cases, valuable as a means of educating each side to the difficulties of the other. They are vigorously opposed by unions.

Means of Industrial Peace.

Industrial warfare in the form of outright conflict or the misunderstanding leading to it, or the hard feeling resulting from it, is a tremendous loss to wage earner, employer and public all. Bare mention of a few of the tested means of peace must suffice.

In Great Britian the growth of unionism has been long and the unions have reached the stage of stability and employers have gained confidence enough in them to make trade agreements and collective bargaining an important means of assuring continuous operation.

In this country legislation has removed many sources of irritation such as hours and working conditions. Many attempts have been made to apply it to wages in the form of minimum wage laws, but are not very successful. Mediation in the case of organized parties by representatives of each side to the quarrel and of the public is often tried after hostilities have definitely broken out. Kansas has tried compulsory arbitration but this sets up a form of authority that is never well received in American democratic minds.

The South and Labor Troubles.

The one section of the country, which, for various reasons, has had little industrial strife is the South. Lateness in its industrial development; its common race and language of employer and employee; and the individualistic, independent character of its people, making trade union leadership hard, have been causes. If our present friendly relations and mutual understanding can stand the strain of successive efforts on the part of those desiring a change in methods, it may be that the South will have pointed the way to the best means of industrial—and any other sort of —peace; mutual acquaintance and a sense of fair play.

One of the most effective ways is for employers and employees to seek to find the bases upon which they do have common interests and work from these toward the interests in which they are bound to be opposed. We are apt now to cry out against any evil for a "law against it". While recognizing the waste and inconvenience of industrial conflict it is well for us to remember the failures that have attended past governmental interference into the fields of economic affairs. What we need is a better understanding on the part of every member of the economic society of the workings of business and economic laws, Statutory laws cannot enforce principles that need behind them public opinion and public intelligence.

Stand By Your Company.

If you think your company's best,
Tell 'em so.
If you'd have it lead the rest,
Help it grow.
When there's anything to do
Let the fellows count on you,
You'll feel bully when it's through,
Don't you know.

When a stranger from afar
Comes along,
Tell him who and what you are—
Make it strong.
Needn't flatter, never bluff,
Tell the truth, for that's enough;
Join the boosters—they're the stuff,
Sing your song!

—Selected.

Questions.

1. Mention as many things as possible that employers and employees have in common. As many as possible in which their interests are opposed.
2. It is argued that inasmuch as industrial accidents and disease are the result of society's way of doing things, society should pay the compensation. Comment.
3. How can shorter hours increase production?
4. Why do unions oppose "company unions"?
5. What effect does the promotion of workers to executive positions have on the labor movement?

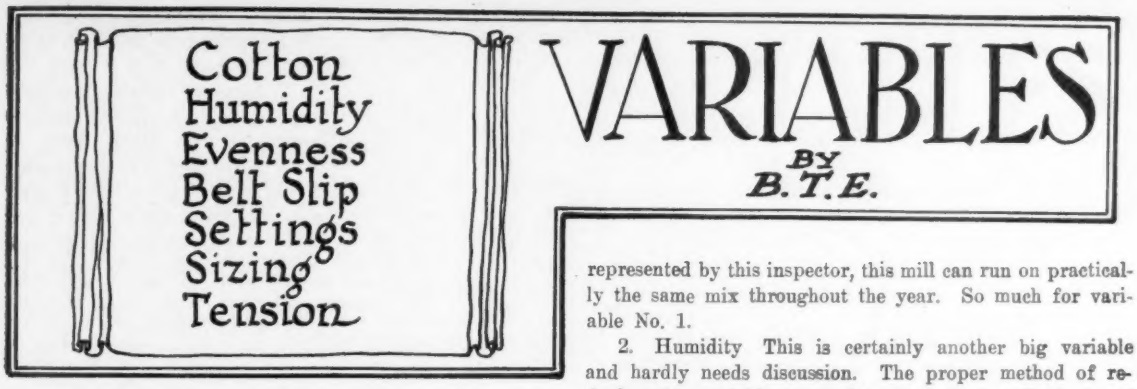
Booklet on Testing Standards.

The American Society for testing materials has issued a new pamphlet containing the twelve standards and eight tentative standards prepared by Committee D-13 on textile material covering specifications and methods of testing. The booklet gives tolerance and test methods for cotton yarns, electrical cotton yarns, cotton sewing threads, tire fabrics, cord tire fabrics, and electrical silk and cotton tapes; tolerance for numbered cotton duck, hose ducks and belt ducks; specifications and tests for osnaburg cement sacks; standard specifications for textile testing machines, and standard methods of testing woven textile fabrics. The tentative specifications cover tolerance and test methods for rayon and knit goods, and certain light and medium cotton fabrics. The book also includes the society's definitions of terms relating to textile material. Tentative methods of testing cotton fibers, and for other testing and indentification are given.

In addition to the foregoing, various tables and formulas of interest are included in the booklet, which is available from the society, 1315 Spruce Street, Philadelphia, Pa., at seventy-five cents per single copy, with a smaller price per copy in larger orders.

Concerns Handling "Pioneer" Picker Sticks.

Pioneer Pole & Shaft Company, Memphis, Tenn., announce that the Odell Mill Supply Co., Greensboro, N. C.; the Spartanburg Mill Supply Co., Spartanburg, S. C., and the Greenville Textile Supply Co., Greenville, S. C., are now the sole distributors of the "Pioneer" brand picker sticks in the states of North Carolina, South Carolina and Georgia.



What is it?

What is what?

What is it that every cotton mill must strive toward in order to be successful? The answer to this question is very simple but quite hard to attain, and is:

Elimination of Variables.

If I were to list some of the most important of these variables I would give the following: 1, cotton; 2, humidity; 3, evenness; 4, belt slip; 5, settings; 6, sizing; and 7, tension.

I believe the foregoing will cover quite enough ground for one short article, without going into them very extensively at that. Now let us take up each one separately and see how we can guard against and reduce any variations that might arise.

1. Cotton. Here is the biggest variable of all, and its reduction or elimination is most important. Is there anyone, anywhere, who would argue the point that any mill would not run better, throughout every process, if the same type of cotton were used day in and day out? This of course, to the large mill, is an impossibility, but it does not mean that we cannot approach it. How can it be done?

In the first place, a mill should have a very definite idea as to just what cotton will give them the best results. Once this is determined, these grades and staples should be set up as standards, with allowable variations noted in order to secure maximum economy. For example, if the mill decides it can run Middling and Strict Low Middling, both to be 1-inch staple on a 50-50 basis, then this should be the standard. If the finished product will allow tinges to be used and perhaps a small percentage of Low Middling if procurable at bargain rates, this will be thoroughly understood by the mill and the cotton buyer, and economies will result.

Even after standards have been set and the mill buyer has bought on them, this does not mean that the mill can take the cotton as it comes and be assured that this variable, cotton, will be held to a minimum. What the mill must do in order to reduce this variable now is to sample and reclass, as the cotton comes in, every bale. All bales not as bought should be rejected, and any bales of cotton found with the staple too long for use should be held to one side, accumulated and sold. The profit from this source, if large quantities of cotton were used, might easily be enough to pay this cotton inspector's salary. All cotton found suitable for use by this man would be stored, for future use in mixes as laid out by the mill standard. By complete cooperation between the buyer and the mill, as represented by this inspector, this mill can run on practically the same mix throughout the year. So much for variable No. 1.

2. Humidity This is certainly another big variable and hardly needs discussion. The proper method of reducing this variable to a minimum is to install plenty of humidity and then control it automatically. The only bad feature of many systems is uneven distribution of the humidity to all parts of the room, even where the automatic controls may be working perfectly. The most up-to-date systems tend to reduce this by providing a circulation of air. Some day I hope the cotton mills can afford not only to control the humidity in their rooms, but the temperature as well. I believe the elimination of this variable would certainly increase the yearly production to a marked extent. Who will be the leader?

3. Evenness. This is a subject on which a book could be written and about which most mill men know and hear a lot. Suffice for me to say, therefore, keeping this variable at the lowest minimum depends entirely upon how nearly we approach the elimination of all other variables. If our laps, roving, yarn and cloth were all even, inch for inch, we would have perfection.

4. Belt slip. Here is a variable often overlooked, but which is very important. Its elimination is gradually taking place through the use of the individual motor. For those not fortunate enough to have individual drives, the best method of eliminating belt slip as far as possible is to keep the belts clean and use a good belt dressing. Keeping belt slip uniformly low means a more uniform speed on the various machines, which is highly important in order to insure constant production under the more modern systems of doffing, etc.

5. Settings. This is a point that many mills take for granted. The overseers should be held directly responsible for all settings and should check up on their men and make sure that they are following the standards that they, or the mill, have decided to be the best. Properly designed tools should be supplied in order to insure accuracy and to cut down stoppage as much as possible. This variable is extremely important, and its elimination may mean the difference between good and poor running work.

6. Sizing. The application of size to warp yarn and the drying of the sized yarn offer many possibilities for variables. Good sizing can be done day in and day out only by eliminating variables. I would rather have a fair yarn and good uniform sizing with warps of uniform moisture content, than a good yarn upon which a poor job of sizing has been done and the warps dried out too much. Every application of instruments to control these variables has met with success, and yet some mills still stick to the old rule-of-thumb methods with their inevitable non-uniform results. This topic will perhaps bear a little more discussion.

In the first place, if every batch of size is not just

like the preceding batch, it is easy to see that a variety of results will be obtained. After a mill has determined what is the best size formula for their conditions, the ingredients of every batch should be carefully weighed out in order that they may be sure that what they start with is the same every time. All heating in the size kettle and size boxes of the slasher should be done through closed steam coils, which reduces the possibility of starch being thinned down as it is where live steam is blown into it. The size kettle should be provided with an automatic temperature control with recording chart, by which every batch can be brought to the same temperature and boiled at that temperature for a predetermined length of time. And now that we have our starch properly cooked and are sure of a uniform supply we are ready to apply it to the warp yarn.

The size boxes on the slasher should be provided with a constant level device and an automatic temperature regulator, which will assure us that this size we have taken such pains to prepare will be kept at a uniform temperature as long as we care to run the slasher.

Now we come to another extremely bothersome variable. We have sized the yarn with an absolutely uniform size, and now the problem is how much to dry out this yarn. If we dry out the yarn too much, it will be weakened and there will be excessive loom stoppage, and hence, loss of production. If we leave the yarn too damp, we are almost sure to get mildewed warps, which are rather costly. The problem then, is to hit the happy medium and hold it. This can be done very easily by a little research and exercising a little patience. The first thing we must set is the standard amount of moisture which we desire to have left in our warps, and then by running our slasher at various speeds and taking samples from the warps at these speeds, determine the moisture content for each speed. Then all we have to do is to select the speed that will give us the desired result, put some sort of an indicator on the slasher to show when it is running at that speed and there you are. Naturally this speed will vary for different numbers of ends and sizes of yarns, but they simply mean more marks on our speed indicator.

The foregoing combination will assure us of getting the best sized warps of uniform moisture content that it is possible to make. Try it and be convinced.

7. Tension. Here is a tough one to keep uniform. One instance is on the roving frames. Some operators insist on running the ends tighter than others, which means variation, and is just another one of those little things that only watchfulness will help. Other tension problems we might mention are the putting on of bands in the spinning room, where variations in tension mean variations in spindle speeds, which means variations in twist and breaking strength. There is a machine now on the market that helps to reduce this possibility, and many mills are using it with success.

And so I might go on and on with these many cotton manufacturing variables, but it has been my object to touch only the larger ones and to put across the idea that a mill will be just as successful, as far as operation goes, as that mill is able to eliminate *variables*.

Finishing Linen Cloth and Toweling

By T. WOODHOUSE AND A. BRAND.

In addition to the methods of examining cloth already mentioned, use is sometimes made of a cloth inspecting machine such as that illustrated in Fig. 2, and made by George Hattersley & Sons, Ltd., Keighley. The table over which the cloth is drawn is reversible, one side being painted black and the other white, so as to provide a sharply contrasting effect to the general tone of the fabric being examined. The table is marked with a scale to indicate the width of the cloth and in addition a measuring motion, having a rotary brass dial, is fitted to register the length of the piece.

The cloth tray at the bottom of the machine is mounted on runners to facilitate the removal of the examined piece; there is the usual pair of drawing rollers near the far edge of the table, and a plaiting-down motion at the back, with cloth rack. Instead of the plaiting-down motion and rack, a wood roller may be provided on which the cloth can be wound or batched, as it is termed. The drive to the machine is by means of a claw clutch, controlled by a footboard, the latter extends across the whole width of the machine, so that the operative can start or stop the machine in whatever position she happens to occupy along the front. The pulley speed is normally 30 r.p.m.

When the inspecting operations are completed, the cloth is passed forward to the next machine in sequence—a measuring machine; in some places the cloth is measured on a folding or plaiting machine, whereas in other places the cloth passes directly to the eroppers, but before dealing in greater detail with the operation performed at this

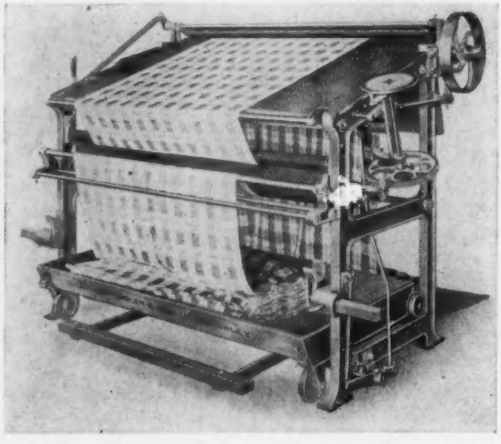


Fig. 2

stage, it may be advisable to introduce a few remarks on the essentials of finishing machinery.

Finishing.

The cloths from the loom, even after a thorough inspection, are rough in general appearance, often show the design indistinctly, exhibit numerous interstices, are dull in tone, and limp to handle. The purpose of the sequence of finishing operations is to remove the roughness, usually caused by chafed yarns, clear up the design, rendering it distinct and easy of apprehension; fill up all interstices

caused by the interlacing of the warp and filling; brighten the tone of the fabric, and improve its handle.

The appearance of the loom fabric is considerably enhanced even by the cropping, cutting, or shearing alone. Cropping removes all projecting fibers from the fabric, giving it a clean-looking smooth surface, and rendering the design more easily visible. Pressure is needed to flatten the individual threads and so fill up the interstices, and the interaction of three factors—pressure, moisture, and heat—complete the finishing operation by imparting gloss, clearing up the design to the last possible degree, and giving the fabric the desired stiff leathery feel . An auxiliary factor that may be used in conjunction with heat, moisture, and pressure for these last purposes is the application of starchy materials and finishing compounds such as gum tragasol or gum farinol, the use of which increases the amount of gloss obtainable, alters the handle or touch, and renders the filling up of the interstices more complete. Variation in the methods and degrees of application of these four factors—heat, moisture, pressure, and materials—produces corresponding variations in the appearance of the finished cloth.

The operation of cropping is also known as cutting and as shearing, and, as already indicated, it involves the removal of all projecting fibers from the surfaces of the cloth. It may be regarded as the first mechanical operation in the sequence of finishing processes. Briefly stated, the cloth is fairly heavily tensioned by passing it over and under a series of strong, smooth iron rails or bars, and then guided past a quickly-revolving spiral blade set closely to a fixed blade, the cutting action of which clips or crops continuously the surface of the cloth.

The machines are strongly and substantially built in order to secure strength for the tensioning rails, and rigidity of the cutting members, of which there are usually two sets or four sets, although a very few machines may have three sets. The machine with two spirals and two corresponding straight blades is termed a double cropper, whereas a machine with four spirals and four straight blades is called a quadruple machine. In the former case, one set of blades acts on each side of the cloth, and in the latter case, two sets act on each surface. The cropping effect of the latter is approximately twice as much as the former, hence the quadruple cropper is used where a superior finish is necessary or desirable, although the same effect can be obtained by running the cloth through two double cropping machines in series, or by running the cloth twice through the same double machine. In the latter event, it is good practice to reverse the cloth, i.e., pass it through with face downwards the first time, and face upwards the second time. The reason for this is that though nominally both sets of cutters are alike, it is not unusual to find one set working better than the other set.

The straight blades measure 3 inches x 1/16 inch in section and may be made any reasonable length; usually they are about ½ inch longer than the spirals, and the latter are given a lateral traverse of about ½ inch to ensure equal wear on both blade and spiral. The spiral cutters are often 4½ inches in diameter, and have either 8 or 10 cutting edges. The speed of the cloth through the machine is from 6 to 8 yards per minute. Taking the two extreme cases indicated, the number of cutting contacts may be calculated as follows:

The cutting contacts per inch will be a minimum at the quickest speed of the cloth, the slowest speed of the spiral, and the smaller number of cutting edges on the spiral. Thus, with the cloth at 8 yards per minute, the spiral with 8 cutting edges and running at 1300 r.p.m., the number will be—

$$\frac{8 \text{ edges} \times 1300 \text{ r.p.m.}}{8 \text{ yards} \times 36 \text{ in. per yard}} = \frac{8 \times 1300}{8 \times 36} =$$

36.11 cutting contacts per inch.

With the cloth at 6 yards per minute, and a 10-edged spiral running at 1400 r.pm., the number will be—

$$\frac{10 \text{ edges} \times 1400 \text{ r.p.m.}}{6 \text{ yards} \times 36 \text{ in. per yard}} = \frac{10 \times 1400}{6 \times 36} =$$

= 64.81 cutting contacts per inch.

A typical example of a double cropping machine, as built by Urquhart Lindsay and Robertson Orchar, Ltd., Dundee is illustrated in Fig. 3. Motion is imparted to the whole machine by means of a main driving belt *A* running on tight and loose pulleys *B*; the belt is controlled by the forks *C* and the handle *D*. The spirals are driven from the pulley shaft by means of the other two belts, *E* and *F*. The crossed belt *E* drives the lower or first spiral operat-

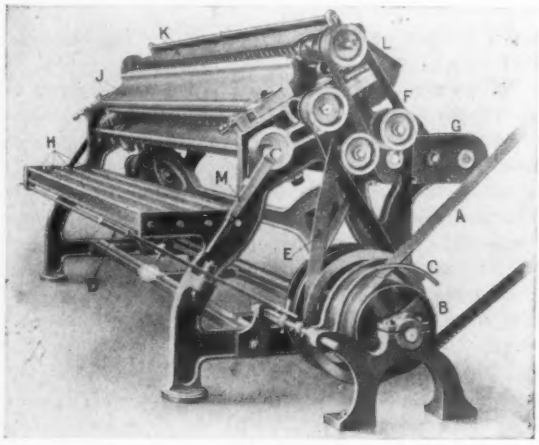


Fig. 3.

ing on the underside of the cloth, and the open belt *F* drives the upper or second spiral operating on the upper surface or face of the cloth. Three pulling and delivery rollers at the back or delivery side of the machine, and therefore not seen in the illustration, are driven by gearing at the opposite end of the machine to that shown. The subsidiary train of gears to drive the outermost of these three rollers is contained in the guard *G*.

The cloth is laid on the floor or in a shallow wooden trough below the four tension rails *H*, and is then "railed" in one of a variety of ways in order to obtain the desired tension. The cloth next passes over an adjustable plate or bed *J*, the inner face of which is suitably shaped to hold the cloth in close contact with the cutting blade, when the underside of the fabric is cropped. Passing the first spiral in a downward direction, the cloth continues downwards for a short distance to meet a second adjustable plate which holds the fabric close to the second spiral when the other side of the fabric is operated on. From the second set of blades the cloth passes to the three pulling or delivery rollers, the center one of which is on the upper side of the cloth, and is held down on the other two (under-

(*Continued on page* 48.)

The Breaking Up of Hard Wastes

BY OSWALD HARRISON.

In every cotton mill there is made hard waste. Its nature is yarn threads containing a certain amount of twist. Slubbing, intermediate and roving frame wastes all have twist inserted but the amount is not sufficient to justify the term "hard" being applied to these wastes. So we say waste is hard waste of all processes subsequent to spinning, and includes wastes from the mule and ring frames, though not much is made at these places, winders, beamers, ball-warpers, slashers, pirn winders, cup winders, and looms. When we think of all these processes and the amount of waste that must inevitably be made, we can easily understand how valuable must be all this waste. In past years this quantity has been considered to be only fit for engine cleaning waste and accordingly sold very cheap, but today managements realize the value of this waste and so it was thought that if a machine could be made to open it out into loose cotton again, considerable sums of money could be made or saved. And so there has been evolved a list of machinery whose purpose is to return these wastes from a thready nature into a loose open state free from "hard ends."

My purpose, therefore, is to describe the processes to this end and to endeavor to show how best these machines can be made to do their work so as to secure the maximum efficiency. Again must be classified the kinds of waste, although all "hard." Slasher waste is in long lengths and must, first of all, be cut up into shorter lengths, say about a foot long. Weavers cop bottom waste and winders waste does not need any preliminary treating, and so we first of all make a stack of the several wastes, aiming at uniformity as much as possible; thus the mixing of cop bottoms of 80s with 16s ought to be avoided.

A large waste mill may have three distinct classes of waste: One of low quality used for the manufacture of cotton blankets; a medium quality used for making into counts 2s to 6s; and a better quality used for spinning up to 12s and sometimes 14s can be obtained.

If the hard waste is clean and free from impurities, such as paper tubes, it can be fed direct to the hard waste breaking machine, but a far safer way is to use a preparing machine. The cotton is taken from the face of the stack and placed onto the feed lattice of this machine. This machine is made extra strong to withstand the heavy work expected from it, and consists of a lattice upon which the operative places the waste and this lattice delivers the material to a pair of feed rollers composed of toothed discs which effectively hold the material while the iron cylinder, covered with hardwood lags, combs it out. The cylinder should run at about 250 r.p.m., and strikes upwards. The waste is taken from the cylinder, or rather it is deposited upon a doffer which is fitted with metal plates having steel teeth, and the material is taken from the doffer by a pair of calender rollers and not by a comb as on a card.

The rollers may deliver the material onto the floor or a lap forming mechanism can be attached but it is not recommended as it only increases the cost of the machine without adding anything to its efficiency. However, if for some reason the material has to be carried a considerable distance, then, of course, it is far more convenient to carry it in the lap form. There is also a roller placed underneath the machine, between the cylinder and doffer, and is for the purpose of passing forward any waste that has passed between the cylinder and doffer.

There is little of importance to be said about the preparing machine. In erecting, first of all put the frame sides down after having thoroughly cleaned all surfaces, bolt the cross rails and level up roughly. Then put on the cylinder pedestals and fix the shaft in the cylinder. By taking out the back rail the cylinder can then be run in, and by having suitable planks or blocks the cylinder can be lowered into the pedestal bearings. Line thoroughly. The hardwood lags can now be fixed, care being taken to see that every one is tight, and these must be inspected at regular intervals, say every six weeks, as some may work loose. The makers may not send washers for these bolts and in case they do not it is advisable to put washers on as they grip better if they have a washer between the nut and the cylinder. Then put the doffer in and fix the doffer lags; then the undercasings and bottom roller; the feed part next and then the delivery end, finishing off by putting on the covers and driving chains.

There is nothing that should cause the average man to hesitate in the erection of this machine. The settings in every case are but approximate, as the object of the machine is merely to open out the rough matted material and to remove the impurities. There is a type of this machine where two or three rollers have been placed on top and the first roller throws heavy impurities such as bobbins, into a box fitted in the top cover.

Approximate settings are as follows: The feed rollers should be about ¼ inch from the teeth of the cylinder; make your own gauges. The feed roller pedestals are fitted with adjusting screws. The doffer is set to the cylinder so that ⅜ inch separates the teeth. The top calender is set ¼ inch from the points of the doffer teeth by regulating the calender roller pedestals. The under roller pedestals are adjusted to give ⅜ inch clearance from the doffer teeth and ½ inch from the cylinder. An English machine is made in three widths, 36½ inch, 40½ inch, and 48 inch, the 40½ inch being the most common. One machine can produce approximately 10,000 pounds in ten hours.

The advantage of using such a machine is that the risk of fire is considerably reduced and the waste is made much softer and hence produces better work at the subsequent machine. Points to watch are: keep the working parts well oiled; remove the impurities from beneath the machine often; and always have ample fire fighting appliances near at hand.

The Breaking Up Machine.

This machine is made up of several cylinders, from one to six, each identical, usually 36 inches diameter and 21½ inches wide. These cylinders are made of wrought iron turned and balanced and then have lags with specially hardened steel pin teeth fastened to them, usually 36 or 39 to a set for one cylinder. The cylinder revolves at 850 r.p.m. and can have ball, roller, or plain self-oiling bearings. Considering the very heavy work that these cylin-

ders are called upon to perform the better type of bearing seems preferable.

Let us consider the manner of setting this machine. The cylinder strikes downwards and thus the steel pins tear out the mass of yarn held between a pair of small diameter feed rollers. These feed rollers are in fixed bearings and the cylinder has to be set to the feed rollers; in my opinion a very bad proceeding, as it is quite easy to get the cylinder out of true alignment and if so then hot bearings result, and if fixed ball bearings are used then the casing is broken. The distance between the feed rollers and the points of the steel teeth should be 3/16 inch. A gauge is inserted and then the cylinder is knocked up until the gauge is tight, then the cylinder pedestal bolts are tightened. Why, in the name of common sense, cannot the makers furnish these pedestals with adjusting screws, or better still why not have the cylinder pedestals pinned and fixed in position and the feed rollers mounted in an adjustable bearing or bracket? I have suggested this to one eminent firm of makers of this machine and they have promised an investigation along these lines.

Beneath the feed rollers is a steel cutter plate and this must be set close to the cylinder, say 3/16 inch. The material is stripped by the cylinder itself as a stripping plate is placed on the opposite side to the feed rollers. Here again adjusting screws would be a great advantage and ensure closer and more accurate setting, and thus better work would obtain. If the stripping plate is set too far away the cotton is carried around by the cylinder and neps are produced which show up very bad if the material has to be dyed.

The best procedure is to have a machine of one or two cylinders and have a lap forming mechanism attached and a narrow lap made. Then by placing five or six of these narrow laps on the feed table of a six-cylinder machine the cotton waste is well broken up and cotton free from hard ends is the result. Great care must be exercised in the handling of these machines; no machine in the mill is more liable to cause fires and, therefore, ample fire fighting appliances should be ready at hand. Also great care must be taken of the cylinders to keep them in good condition. It will be found that the steel pins or teeth wear down or get hooked and thus it is advisable to have an overhead trolley arrangement on which a jack block or chain hoist can be fixed and the cylinders hoisted up and turned around—it is best to turn the pedestals with the shaft—say about every four or six weeks. When this is done, if a straight edged bar is put across the cylinder it will be seen that the center is worn more than the sides and when in this condition it requires grinding level.

These cylinders are not ground to get the teeth sharp, they are ground to get a level surface so that a true setting can be made, for unless correct setting obtains all across the face of the cylinder, then plucking is sure to result. There are several types of teeth made, some have fine pointed teeth suitable for the fifth and sixth cylinders, but not strong enough for the earlier cylinders, owing to the cotton being more matted; there are the rough, open-spaced teeth suitable for the first four cylinders; and some makers advocate flat pins and these are quite useful. In every case the thing to be watched is that the cylinders are level. Grinding machines are made and some have a solid carborundum wheel; others have a traversing grinding disc. A very handy form of this grinder is made by Proctor and Schwartz, and can be easily fixed to the frame sides. Properly ground cylinders are a deciding factor in securing the best results from these machines.

It will be found to be good practice to have several spare sets of feed rollers (these are all interchangeable) and then when the cylinders are turned around, put in a fresh set of feed rollers and send the old ones to be refluted. To keep these flutes in good condition means a great deal and time spent on this work will repay the operating executive.

On some machines a fan is placed to draw the cotton on cages and it also takes away the dust, but the use of fans can be dispensed with as the current of air created by the cylinder is sufficient to throw the cotton onto the cages and with fans there is a greater fire risk as the fan current takes a spark and thus sets fire to the flue—and so for ordinary wastes, that is, reasonably clean wastes, a fan arrangement is not to be recommended.

From the cages the material is passed forward to the next pair of feed rollers and the same process is repeated through every cylinder. The feed rollers are heavily weighted to ensure that no plucking takes place and they hold the cotton firmly while the teeth of the cylinder comb it out. The weights on the outside of the machine are preferable to those on the inside as they are far more convenient to get at. The erection of the machine is simple, as the shops send them out all fitted up in sections and these sections only require bolting together.

A solution of soft soap is sometimes put on the cotton as it is traveling on the inclined lattice at the delivery of the machine. This is done by a simple arrangement of a roller revolving in a bath of the solution and a brush working on the top, hence the heavier the brush on the roller, the more solution is sprayed on. The solution is made by using 1½ pounds of soft soap to one gallon of water and made to twaddle at 2 or 2½; or oleine oil can be used, about seven per cent solution, and this is better than soft soap where boiling cannot very well be done, as the oil is easily soluble in cold water. The cotton should stand for at least 24 hours after spraying, otherwise trouble will be encountered at the lappers and cards.

It is usual to drive the cylinders by 4½- or 5-inch belting onto the first, third and fifth cylinders and then drive the second, fourth and sixth cylinders by ropes from the preceding off side cylinder shafts.

There is a slight variation in the speed of the feed rollers so as to avoid choking of the cages and the wheels on the side shaft, which are all driven from the first cylinder, are usually 19, 21, 23, 25, 27 and 29, thus each succeeding pair of rollers revolve a little faster. Production depends on the nature of the waste fed, but approximately 100 pounds per hour is right.

It ought to be mentioned that in some types of machines only one feed roller is employed and a feed plate is placed beneath; in this way a closer setting can be made, but from my personal experience I prefer the pair of feed rollers.

From this machine, then, the waste is delivered as cotton once again, free from all twist and all hard ends and from here the cotton is taken to the hopper of the picker or lapper after standing to allow the soap solution to permeate the whole. In the case of material to be raw stock dyed then the soap solution is not necessary.

Finishing Wool and Cotton Mixtures

BY "FABRIC."

In the finishing of woolen goods containing a percentage of cotton it becomes necessary to depart somewhat from the usual methods employed in the finishing of all wool fabrics.

With all the precautions possible there is still danger of trouble arising from the tendency toward the running of the cotton colors in the necessary treatment to secure a well finished cloth, with the wooly effect predominating.

The preparation of the soap for the fulling and scouring, and a quick handling of the goods are most important. While an excessive alkaline strength of the soap should be guarded against, it should be sufficiently strong to insure a thorough saponification of all the grease contained in the cloth, any shortcoming in this particular will prove as dangerous as an excessive strength; so that an exact adjustment in the matter is most important.

In keeping down the strength of the soap, the mistake of getting the solution too thin should be avoided. The consistency or body of the soap can work no harm, if the alkaline strength is right; and it should be sufficiently heavy to take up and hold the loose color and other foreign matter during the treatment of the goods in the fulling and scouring processes. The proper moisture and an avoidance of over-heating in fulling should be observed, and a quick handling of the goods from the fulling to the washing should follow. While it might be safe for all wool goods to lay for a time in the soap or in the wet condition, this class of mixed goods should be kept on the move while in the wet finishing process.

Aside from the possibility of trouble from the floating colors, a brownish stain is likely to develop while the cloth is in a wet condition, if allowed to become dry in places, while other portions remain wet. This condition is most evident when the cloth is in a folded condition, the stains appearing where the folds are exposed to the air. This difficulty may be somewhat overcome by covering the goods with a wet blanket to retain a uniform moisture. The best and safest way is to dry promptly, and leave no cloth wet over night. Should it seem advisable, and the washers are "water tight," a set of pieces may be removed from between the rollers and submerged, as no harm can come to them while in this condition. If this is done, it will be necessary to secure the end of each piece to a string so as to take them up readily in the morning, when they should be replaced between the rollers and given an extra rinsing, to remove any loosened color.

The construction of the cloth in the loom should be such as to admit of a free and ready shrinkage in fulling at a moderate temperature. The non-felting character of the cotton tends to check the fulling capacity of the cloth in proportion to the percentage used, and this should not be increased by a crowding of the warp or a too great width in the loom. A forcing of the fulling against such odds is bound to endanger both the colors and the agreeable handle of the fabric. This matter should be carefully considered by the designer, in order for the finisher to render the best possible service in his department, and to make the goods attractive to the buyer and consumer.

If the cloth requires napping, it may be done in the wet condition; but this will nearly always necessitate a delay and a variation in the time required for the cloth to remain in the wet state, for which reason I advise dry napping.

By this method the cloth goes promptly from the washers and extractor to the dryer, thereby securing the best possible results as to a uniformity of treatment. Cassimeres or other goods having fancy designs, and where the fulling is slight, may be given a treatment of brushing before shearing, to better clear up the pattern and to retain the wooly feel produced by the fulling, and secure what is often termed the natural finish.

If a velour effect is required, a careful and systematic napping will be necessary. To secure the best results, the cloth should be sufficiently well felted to render it possible to raise a dense nap. If the design or pattern has been covered by the felt produced, all the better; a good nap will then be possible, and a proper treatment will disclose the pattern.

To secure the best results, as near a standing nap as possible should be produced. If the napping is done by the use of the teasel gig, the work should be started with old and well worn teasels, to which the cloth should come in contact very lgihtly until the felt on the face of the cloth has become evenly and well broken up. This should be done with the nap laid in the direction it is intended to be when finished, when a reversing of the cloth or the cylinder should follow. Remove at least one half of the teasel slats (every other one) and replace with fairly sharp teasels, and bringing the cloth in contact carefully, run until a good thick nap is secured, when the nap should be reversed again and run just enough to fairly turn the nap already secured, but not to produce any additional nap; the idea being to leave it as nearly a standing nap as possible.

If the wire napper is used, regulate the work to secure the same result. If a double cylinder machine is employed that will admit of running the cylinders in opposite directions, the reversing of the nap will not be necessary after the first breaking up of the nap. The careful and intelligent procedure of the work should be carried out by the finisher, rather than any definite following out of the suggestions given. The main idea being to secure a clearing up of the pattern, a dense standing nap and uniform results.

In the shearing the brushes should be clear from an accumulation of flocks and be in proper adjustment to do good service. The blades should be raised so as to top off and level the nap, by two or three runs, when they may be lowered gradually to the point desired. Care should be observed not to shear too close. Leave a sufficient length of nap to insure a soft plushy feel, through which the pattern may show clearly.

Run on the press with the face to the bed of the machine, and run onto a roll, to remain until cool. Following this, give a light steaming on the face of the cloth, to remove the barby feel produced in napping and pressing. This is absolutely necessary to the velour effect, but goods that have not been napped, or that have a close or thread finish may or may not be steamed.

CURRENT TOPICS

Coolidge Isn't That Kind of Man.

Those numerous persons who insist on believing that Calvin Coolidge will be the Presidential nominee of his party next year are apt to be as wrong as were the even more numerous ones who held until recently that the President would positively and openly seek another term. Such assumptions fail to take accurate account of the Coolidge personality.

An outstanding attribute of that personality is something closely akin to stubbornness. It might be called evenness and consistency of purpose, pursuit—and negation. Coolidge's aptitude for "silence" has not been so much in the non-use of words as in a refusal to merely play with words. Few Presidents have used words so liberally as he has done, but none has employed them less "freely." Those persistent ones who think his use of the phrase "do not choose" was an astute avoidance are likely to find themselves very much in error.

Of course there may come about a situation under which even a Coolidge could not refuse to run again for the Presidency. But the contingency is a quite remote possibility.

The truth of the matter is that the President realizes that he would subject his renown to great risk by remaining in the Presidency another term. Things rarely have "broken" so favorably for an occupant of the office as they have for him since he entered the White House. There is little vanity in his make-up, he is the last person to believe that the country cannot get along without him. And the country has never felt that it had to force the Presidency on any man.

Coolidge purposes to quit and that is all there is to it. Any bet that he won't may be supported by a lot of abstract human nature—but Coolidge is a rather concrete human being of a quite definite type—one who takes much pride in meaning what he says.

Keep An Eye On This Decision.

The Interstate Commerce Commission recently ordered that a schedule of freight rates be reduced for the purpose alone of helping a group of producers meet a difficult situation that wasn't brought about by rates at all. It is the first time that the commission, in reducing rates, has stood flat-footedly on the Hoch-Smith Resolution enacted by Congress about three years ago. A hearing, in another case, is to take place this month on the question of whether the commission will permit a group of railroads to voluntarily reduce a schedule of rates as a help for an industry served by the roads. The principles set forth in the Hoch-Smith Resolution are quite pertinently involved in the case.

The resolution, as stated in this space before, directs that in making rate adjustments the Interstate Commerce Commission always consider "conditions" no matter from what cause they arise. The commission also is directed to shape rates so as to promote the "freedom of movement" of commodities affected by conditions. The upshot of the resolution is that the commission act as a national board of economic control, that the Government's power of rate regulation be used for bringing about such economic and social readjustment as the Interstate Commerce Commission may think desirable.

The reductions made in terms of the resolution affect deciduous fruits moving from California to the East. Grapes, in most part "juice" or wine grapes, constitute over 75 per cent of the affected freight. This movement of wine grapes to the East has increased tremendously since national prohibition was adopted. For several years the growers received unusually high prices for their wine grapes. Production was much increased. Then came overproduction, stagnation and depression in the wine grape regions of California. The growers asked for a reduction in rates on the ground that the prevailing tariffs on shipments to the East were too high and therefore unjust and unreasonable. The plea, as made on merit, was turned down. The commission held that the prevailing rates were just and reasonable.

Then the growers appealed on the basis of the Hoch-Smith Resolution saying that rates should be reduced as a relief from bad conditions besetting them. The commission granted this plea, reducing the rates about 10 per cent.

Now if the old rates were "just and reasonable" the reduction as made is a subsidy to the California wine grape growers, their cutomers in the East, or both. The subsidy must be provided by the carriers or by shippers of other classes of freight. Moreover, grapes for market are grown in other sections of the country. These must suffer in the markets of the East in the extent of the "help" given grapes from California.

The issue is rather clear in the case to be heard by the commission this month. It is the appeal of Southern coal mine operators in the Lake Cargo Coal rate controversy. The commission, as noted in these columns at the time, granted to certain groups of Northern operators a reduction of 20 cents a ton in freight rates on coal moving to Lake Erie ports. Southern roads countered with a similar reduction voluntarily made on coal moving from Southern mines to the same ports. This made the differential the same, despite the reductions. The commission suspended the reduction made by the Southern roads, and a hearing on this phase of the subject is to take place this month.

If the commission refuses to allow the reduction on coal moving from Southern mines to Lake Erie ports, the action will mean that the commission proposes to act as arbiter of fortune between sectional groups in an identical industry. In reducing the rate for Northern operators the commission failed to take a flat-footed stand on the terms of the Hoch-Smith Resolution. But if it insists that a widened differential be maintained, its stand in this case will by necessity be on the principles set up by that measure.

Hence the case is a quite important one. The South is particularly concerned. This is because several industries are shifting towards that section. Shall the Government,

in the exercise of its power over freight rates, endeavor to guide and control such trends? Shall it, for example, make other classes of freight provide subsidies for coal moving out of Pennsylvania and Ohio to the Northwest, and thus penalize and impede coal moving towards the same area out of mines in Virginia, Tennessee and Kentucky? Whenever a bunch of producers, like the California wine grape growers get in a muddle, shall the Government go to their rescue with rate adjustments that penalize other and perhaps more deserving producers?

If yes is the answer to the foregoing question, then the freight rates problem is on the way to the murky realm of political intrigue and manipulation. Every section, every locality and every industry is concerned. The Hoch-Smith Resolution tends to make the Interstate Commerce Commission a bureaucratic dictator. It is doubtful if any such powers as those apparently conveyed by the resolution can be wielded safely by any public body.

The resolution should be repealed.

Dangerous Statistics.

Congress at the coming session is expected to give pointed attention to the U. S. Department of Agriculture's handling of cotton statistics, particularly ones entering into estimates and forecasts put forth officially. The Bureau of Agricultural Economics which handles this part of the department's work is the subject of a good deal of discussion and controversy. It is an immense establishment, about the biggest of the kind in the world. Its statistical work has been expanded tremendously in recent years. The pertinency of the bureau was illustrated graphically when a mere expression of opinion coming from it caused the price of cotton to drop significantly not long ago. For the opinion was supposed to be founded on the bureau's statistical grasp of the subject.

The Secretary of Agriculture states that the bureau will not be permitted to put forth any more predictions as to prices. But it will continue to be the outstanding clearing house of statistics having to do with cotton and other farm products.

The bureau's handling of domestic statistics is a capable and, as a rule, a helpful performance. Its crop forecasts and estimates take precedence over all others, and are probably as accurate, on the average, as can be made. The final estimate of the annual cotton yields runs pretty close generally to the definitive figures collected by the Bureau of the Census directly from the ginneries. There was a difference of 600,000 bales last season between the two. This may have owed to the singularities of the season rather than to actual error on the part of the Board of Crop Estimates.

The final estimate of yield is only one, and the last, finding put forth during a season as to cotton by the bureau. Forecasts made during the harvesting period are even more influential. There is no way of checking the accuracy of these. They often vary immensely. In 1926 there was a difference of 30 to 40 per cent between the early forecasts and the final estimate of yield. Change in conditions which could not be anticipated may have equalled this difference.

When such huge changes are possible, there is room for question as to the worth of forecasts no matter how sound, at the time made, they may be. What is the use of saying in September that, if the weather doesn't interfere, a crop, say, of 13,000,000 bales will be yielded by the acreage to be harvested, when the weather yet to come may cause the actual yield to be two or three million bales greater or less? In such a case, a forecast, no matter how formulated, isn't more than a wild guess. Guesses by the Government are bound to have more weight than those of others in the market.

The abandonment of official forecasts of yield is worthy of at least consideration. It may be that the Department of Agriculture would render a better service were its findings as to the crop limited to acreage and final estimate of yield. It is difficult to understand, however, why an intelligent estimate put forth early in the Spring of "intention to plant" should not be helpful, particularly to the farmers. Grain farmers seem to find such estimates helpful to them. One put forth several years ago as to cotton had an apparently unfortunate effect on prices. Congress then forbade the putting forth of any more as to that product. The wisdom of the inhibition is to be doubted. The limitation, as to number and time, later put on forecasts as to yield is more defensible.

A weakness of the Department of Agriculture's forecasting and estimating as to cotton may be in the very thoroughness with which such is done as to the domestic crop. The statistics for this country are in advance of those for any other producing country. Those covering consumption in this country are more complete and prompt than statistics having to do with consumption in other countries. This causes findings as to the domestic situation to be over-valued frequently, since, when findings are made, offsetting facts having to do with the world situation may be unknown.

If the Department of Agriculture is to comprehend the world situation at all, it should be provided with means and facilities for keeping up with foreign angles as fully and as promptly as the domestic ones are trailed.

And it might be wise to put a curb on the propensities of the department to engage in propaganda concerning cotton, particularly the economics of cotton farming. It is no business of a fact-finding agency to give advice about things with which facts are involved. For there always is a temptation and a human inclination to distort the facts in order to emphasize the advice.

A general review by Congress of the statistical work of the Bureau of Agricultural Economics is highly desirable. The bureau has grown too fast, and probably embodies conflicting functions. Its absorption of the Bureau of Crop Estimates probably was a mistake.

The Tariff Embroglio With France.

The controversy between Washington and Paris over tariff duties is apt to prove to be another case of much ado about little or nothing. The French adhere to what is known as a trading tariff; their rates are subject to easy adjustments of the reciprocal kind. Ours is a fighting tariff policy. It allows little flexibility. The French made a trade with the Germans which put some of our products under a comparative disadvantage. The French are willing to trade similarly with the United States, which, however, refuses to indulge in bargaining, asking that its goods be taxed only as are those of other countries. The preponderance of exports from the United States to France are

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raw materials which are subject to no customs duties. Most of those from France to the United States are luxury products which are taxed heavily on entry.

The controversy is complicated somewhat by the fact that while ours is a non-reciprocal tariff policy, the present tariff law does allow a small leeway for bargaining. Some of the duties on goods from France were raised automatically, as a sort of retaliation, when the new French duties became effective. Then there is the flexibility which is supposed to function via the Tariff Commission but has proved to be a rather futile resource.

The incident only adds to ones which are tending towards bringing about before long a reconsideration by Congress of the entire tariff subject. The next "tariff fight" is apt to be basically different from those of the past. It will be marked by many new alignments. Continued increase in American investments abroad are tending to cause a big portion of the American banking world to look with kindly eyes upon the theory of free trade. Several manufacturing industries whose domestic markets are secure regardless of the tariff are inclined the same way. But agriculture, hitherto sympathetic towards low duties or free trade, is becoming definitely protectionist—at least insofar as its own products are concerned. A low tariff segment is developing within the Republican party, while the protectionist segment of the Democratic party is increasing, largely because of growing demand in many parts of the South for this form of aid.

The big question may be avoided, or reduced to second role importance in the forthcoming Presidential campaign, but it is not apt to be delayed much beyond next year.

What the Southern Mills are Doing?

A print works and dye plant costing $1,000,000 will be built in Greenville County, S. C., adjoining the Southern Bleachery, at Taylors, near Greenville. The plant will be constructed by W. H. Bannon, well-known eastern finisher, and local capitalists. Harry R. Stephenson, president of the Southern Bleachery, Inc., will also have charge of the new plant.

Two new mills for Georgia were announced during the past month, and there was considerable other extension and improvement work, together with a number of changes in management, to make the period one of activity among the southern textile mills.

An additional unit, to contain approximately 10,000 spindles and complementary looms, will be built by the Harmony Grove Mills, Commerce, Ga., and will be known as Mill No. 3. Robert & Company, Atlanta, Ga., are the engineers. Lamartine G. Hardman, governor of Georgia, is president of the mill company and J. C. Hood is secretary and treasurer. J. R. Donaldson is superintendent.

Pomp L. Shaefer and others, of Carrollton, Ga., have begun work on a new mill at that place. About 4,000 spindles for making coarse yarns have been purchased and removed from a New York State mill, and are now being installed in a two-story building in Carrollton. Mr. Shaefer is the manager and secretary. Among the directors are C. E. Roop, E. T. Steed, B. F. Boykin, L. J. Brock, J. W. Griffin, S. C. Boykin, G. C. Cook, H. J. Worthy, C. T. Huey, Leon Hood, C. A. Brock and Mr. Shaefer. Mr. Boykin is president and Mr. Brock, vice-president, with Mr. Cook, treasurer.

Lavonia Cotton Manufacturing Co., Lavonia, Ga., will electrify the plant, under the superintendency of J. E. Sirrine & Company as engineers, and when this work is finished, power will be purchased from the Georgia Power Company.

LaFayette Cotton Mills, LaFayette, Ga., have doubled the capital stock to $200,000, and will build an extension to the plant which will be used as a weave room to permit re-arrangement of machinery in the existing buildings. Robert & Company, Atlanta, Ga., are the engineers.

Trio Manufacturing Company, Forsyth, Ga., are adding 1,000 spindles, and several new houses are being built in the village.

Lanett Bleachery & Dye Works, Lanett, Ala., have let contract for the erection of a one-story, 166x73 foot, addition to the grey room and bleach house; a two-story, 97x80 foot, finishing building; and a two-story wing, 50x82 feet. J. E. Sirrine & Company, Greenville, S. C., are the engineers.

Pioneer Braid Corporation will remove from New York to Laurens, S. C., it is announced. Rayon, silk, tinsel and cotton braids will be manufactured. Sidney M. Edelstein & Co., Union, S. C., are the engineers.

Active survey and plan work for the new weaving and dyeing plant to be built by Woodward, Baldwin & Company, at Traveler's Rest, S. C., is being carried out by J. E. Sirrine & Company, Greenville, engineers. Traveler's Rest is several miles north of Greenville, on the Greenville & Northern Railroad, and the mill site is about one mile north of the town. Augustus W. Smith, president of the Brandon Mills, Greenville, S. C., will have charge of the construction program.

Contract for 25 additional four- and six-room houses has been awarded by the Orr Cotton Mills, Anderson, S. C.

Water works and sewerage will be installed for 26 houses by the Irene Mills, Gaffney, S. C.

Oakland Cotton Mills, Newberry, S. C., will soon complete the 55 new homes being added to the village.

The addition to the bleachery and bag mill of the Ware Shoals Manufacturing Co., Ware Shoals, S. C., has been completed. J. E. Sirrine & Company, engineers.

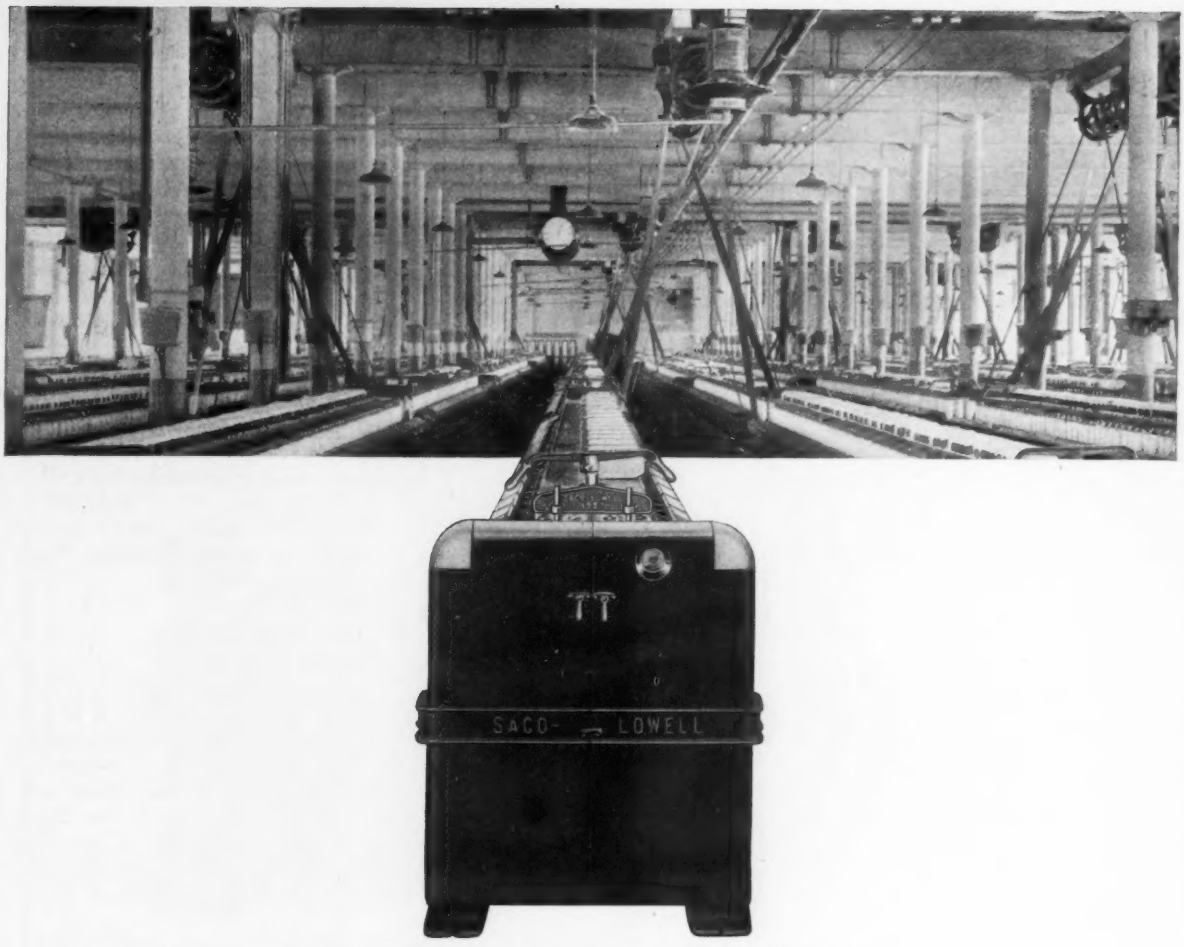
The new addition to the Ninety-Six Cotton Mills, Ninety-Six, S. C., has been finished and the entire mill will be in operation by December 1st, it is announced. The mill building, now, is four stories high, 460x135 feet, containing 60,000 spindles, and complementary looms. The extension added about 36,000 of the 60,000 spindles. J. E. Sirrine & Company are the engineers.

Among the contracts let through the Charlotte office of Lockwood, Greene & Company, were the following: Winnsboro Mills, Winnsboro, S. C., contract for miscellaneous piping, to Southern States Supply Co., Columbia, S. C.; Mills Mill No. 2, Woodruff, S. C., switch, starters and motors, to Allis-Chalmers Mfg. Co.; Arcadia Mill No. 1, Arcadia, S. C., switch, starter and motors, to Allis-Chalmers Mfg. Co.

Chiquola Mfg. Co., Honea Path, S. C., will build an addition to the picker room, as well as improve the streets and sidewalks of the village.

An office building, for the office forces of Mill No. 1 and Mill No. 2, is being erected by the Grendel Mills, Greenwood, S. C.

Slater, S. C., is the name given the site, near Marietta, S. C., of the new mill being erected by the Slater Manu-



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facturing Company. This company, recently incorporated, has the following officers: H. Nelson Slater, president; John Foster Dulles, vice-president; and George A. Hilton, secretary-treasurer. The capital stock is $1,000,000.

Rockfish Mills, Inc., have acquired the Liberty Cotton Mills and the Clayton Cotton Mills Co., of Clayton, N. C. R. L. Huffines is manager.

Dilling Cotton Mills, King's Mountain, N. C., are adding five spoolers, and have let contract for ten new houses and a 20-room boarding house.

A plant to manufacture cord and twine will be established at Rocky Mount, N. C., by W. H. Draper & Sons Co., of Troy, N. Y. Machinery will be removed from the northern location. R. L. Draper and E. E. Draper, of Troy, are the heads of the company. R. L. Huffines, of Rocky Mount, is interested.

It is reported that the Lineberger-Stowe interests, of Belmont, N. C., are at this writing purchasing the Judson Mills No. 3, formerly the Art Cloth Mills, Inc., at Lowell, N. C.

The capacity of the Ellenboro Mfg. Co., Ellenboro, N. C., will be doubled by the addition of about 3,000 spindles and 40 looms, some of which will manufacture 62-inch goods. A new building, to contain this new machinery as well as the slasher and finishing rooms, will be 200x75 feet.

The Burlington Processing Co., Burlington, N. C., has been organized to process cotton yarns. The capital is $250,000. A plant, located in East Burlington, will be in a building 265x67 feet, and will have a weekly capacity of 60,000 pounds. M. D. Smith, A. L. Hill and J. T. Black, all of Burlington, are the incorporators.

Southern Webbing Mills, Greensboro, N. C., which recently purchased a site and announced plans for removing from leased quarters into a new plant, have let contract for the construction of the mill. It will be two stories, 116x100 feet, of heavy mill construction.

Delgado Mills, Wilmington, N. C., are installing 150 dobbies and making improvements in the warping and beam dyeing systems. W. A. Woods is general superintendent.

Raleigh Cotton Mills, Raleigh, N. C., have voted to liquidate the properties of the company.

Standard-Coosa-Thatcher Company, Chattanooga, Tenn., is constructing a new office building, of reinforced concrete, with rough texture brick finish.

Borden Mills, Inc., Kingsport, Tenn., will build 120 additional houses in the village, according to report; this will make a total of 287 houses.

New York interests, headed by Ira H. Garlick and Al Haithwaite, of New York, have acquired the Montgomery Cotton Mfg. Co. plant, Montgomery, Ala., and will operate it as the Cloverdale Cotton Mills Co., manufacturing Cloverdale chambray and other colored goods, on a day and night production. Mr. Garlick and Mr. Haithwaite are president and vice-president respectively, and Frank H. Elmore, of Montgomery, is secretary-treasurer.

C. R. Miller Mfg. Co., of Dallas, Texas, have retired as operators of the Sand Springs Cotton Mills, Sand Springs, Okla., the mill being taken over by The Sand Springs Home Interest, founded by the late Charles Page. E. M. Monsell, a trustee of the Interest, becomes president. H. B. Dowell, formerly superintendent, has been made general manager. An operating partnership has been formed by those in charge with Hesslein & Company, of New York, who will have full charge of the mill output, marketing it exclusively.

Progress is being made on the new plant of the Halifax Cotton Mills, South Boston, Va., for the manufacture of towels. A number of houses have been added in the village.

DuPont Rayon Company has acquired a site of about 400 acres at Richmond, Va., and it is understood a plant for manufacturing rayon there is contemplated.

Russell Mfg. Co., Alexander City, Ala., have closed contract with the American Moistening Company for duplex heads and automatic humidity controls for the addition to the weave shed. West Point Mfg. Co. have placed a similar contract for the new Riverdale weave shed. Gainesville Cotton Mills, Gainesville, Ga., will install this type equipment in the new extension. Among the mills recently arranging for additional American humidifier and control equipment are: Eagle & Phenix Mills, Columbus, Ga.; Wellman Cotton Mills, Athens, Ala.; Appalachian Mills Co., Knoxville, Tenn.; Shelbyville Mills, Inc., Shelbyville, Tenn.; Columbia Cotton Mills, Columbia, Tenn.; South Texas Cotton Mills, Brenham, Texas, and Guadalupe Valley Cotton Mills, Cuero, Texas.

New England Mill Situation.

New England bankers are apparently more skeptical of textile values than New York financiers appear to be, according to the observations of some of the best known manufacturers. While New York financiers are entertaining many plans submitted to them for bringing about mill consolidations in cotton and other companies, the New England brethren are critical even to the point of declining loans that seem gilt edged to those not of the ilk but who have been shrewd supporters of industries through loans on mill paper.

The true reason for the suspicious attitude of the banking fraternity arises from the continued absence of dividends on stocks held by trustees who did little or nothing to maintain their investments on a high plane of mercantile and manufacturing efficiency. As many of the trustees were in the banking world it has been easy for them to cover up delinquencies by talking persistently of high taxation, restrictive labor legislation, and impossible conditions existing among textile operatives.

It is well known that many New England manufacturers, and especially those of Massachusetts, have long had a just grievance against many of the beneficiaries of trusts, who, so long as dividends were forthcoming from investments, were always ready to enter the lists of "humanitarians" engaged in putting the restrictive legislation on the books, and insisting upon the vast municipal improvements whose costs have throttled industries.

When mills and mill men were being attacked by the radicals of the land or by organized labor, many of these trust beneficiaries appeared in the State Houses or in the public prints as special pleaders for the very things that have made it difficult for mills to exist or show profits. These facts are so well known that there are men who are rejoicing that these super-critics of industry and its managers have seen their birds come home to roost and die.

Many investors, representing trusts, and other forms of accumulated capital, are quite willing to put surplus funds for dividend purposes into textile corporations being es-

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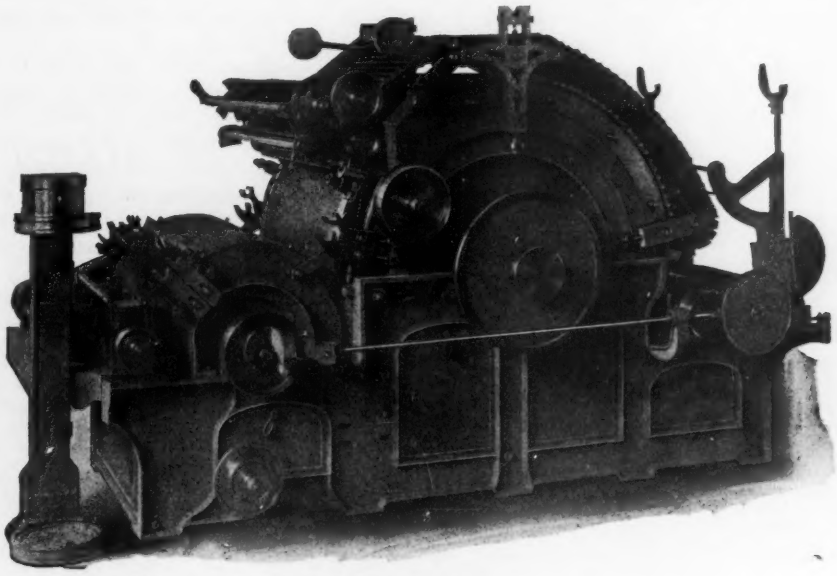

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tablished profitably because the restrictions they advocated so strongly for New England do not exist where the new plants are being located. No complaint could be made, justly, if those making the investments were not so vociferous in declaiming that they were putting their savings in places where they will avoid the very things they fathered as a sort of fad in idle periods.

The same sort of forces that finally succeeded in hobbling New England industry is beginning to be seen more clearly in the southern textile field, but fortunately for its future prosperity, its promoters are being handled differently. The propaganda of national child labor bureaus, and the propaganda of national labor unions, are being met in the South with facts and arguments that are likely to keep legislators sane for many years to come.

More buncombe found root in New England concerning child labor than almost any other fad that was taken up by the dilletante for exploitation in legislative hearings. It is beginning to be apparent to all conservative thinking people in New England cities that no amount of so-called school and college education can take the place in the upbringing of youth that used to be occupied in the teaching of children how to work, and how to conserve respect for those who do work. Indications of this sort of thought are becoming common steadily.

The excessive taxation of mill properties brought on its own punishment so quickly in the section, that there is every reason to look forward to a constantly decreasing burden in that particular. It will take three or four years of idleness and depression, such as the country has not seen since the middle '90s before it will be possible to foresee the beginning of a repeal or modification of the legislation that prohibits a parent from teaching his child the value of the mill industry until he has attained 16 years of age.

One of the bright spots during the past month was the attitude taken by the Amoskeag mill stockholders and managers toward the constantly recurring propositions to buy the properties and liquidate them. The latest propositions came out of Wall street and it is easy to see why promoters were attracted. The Amoskeag Company is one of the very few large textile plants that persisted in conserving its assets while competitors were frittering theirs away in fruitless competition.

The treasurer of the company stated that the trustees of the stockholders will liquidate their property if they want it liquidated, but were of the opinion that it should not be liquidated in any way that would mean its obliteration and the decay of the city of Manchester. In reviewing the situation confronting the property, it was pointed out that there had been very little demand for three years for the kind of ginghams the mill was well and economically equipped to make.

Yet it has been possible in the past year to operate from 55 to 65 percent of the immense capacity of the various mills and to do so at a profit. It has not yet been made clear to the trustees how their investment and credit can be used for the profitable production of other goods, and until such a time appears it is the purpose of the management to hold what they have in assets. Included in these, it appeared from the financial statement to stockholders, were something over $24,000,000 in government bonds, a power plant in operation, worth $10,000,000, a power site and a wide area of forest for the conservation of water supply, valued nominally at a slight sum, but of immense value potentially for power purposes.

It was made clear that the company was operating a worsted division that was making money and was equipped with all the latest machinery of value in such a plant. It did not appear, and yet it is true, that the company does a cotton yarn sales business that any group of mills in the markets would be glad to own. The inferences that could be drawn from what was actually said were even more interesting than the statements themselves.

While the Amoskeag trustees have been grimly conserving their assets in cash and plant, many of their most severe competitors have gone by the board. The Everett mills, the Hamilton, the Tremont & Suffolk, the Methuen and Pemberton, the York, and some others have fallen into difficulties while following a policy of dissipating assets at a time when conservation was needed more than anything else.

No promises were made that would prevent the Amoskeag trustees from selling out the big plant for what it is worth, or for parting with any portion of its investment not required in the full conservation of the manufacturing plant intact, but so long as the present managers live it may be set down for fact that the big plant will not begin to disintegrate, and it will not be transplanted elsewhere to secure what, after all, may prove to be ephemeral advantages.

The New England field is so full of contraditions in textile investment that one who generalizes about it is certain to lose sight of many very essential substantialities. For example, New Bedford two years ago was classed as a center certain to disappear or pass into a decline as its sister city, Fall River, did. Only a week or two ago, the Firestone Tire interests bought one of the largest tire fabric plants in the city and will operate it in full, feeling that for its purposes, manufacturing can be carried on as cheaply in New Bedford as anywhere else in this country. The company owns a small plant in Fall River and it has been operated at a profit there for some years.

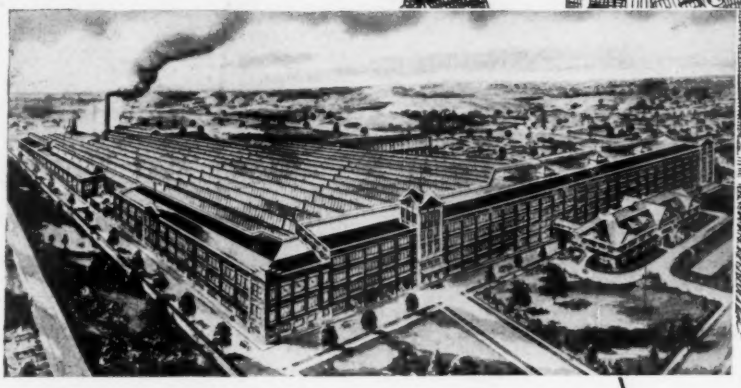
Fourteen miles away from New Bedford—in Fall River—there are more than a dozen mill plants idle that will never be started again on print cloths. Yet in that city there are several plants that are making money and paying dividends regularly. Last week, for example, the Luther Mfg. Co., a small plant making fine carded yarn specialties in the gray, paid a quarterly dividend of 2 percent to its stockholders, just as it did the two preceding quarters.

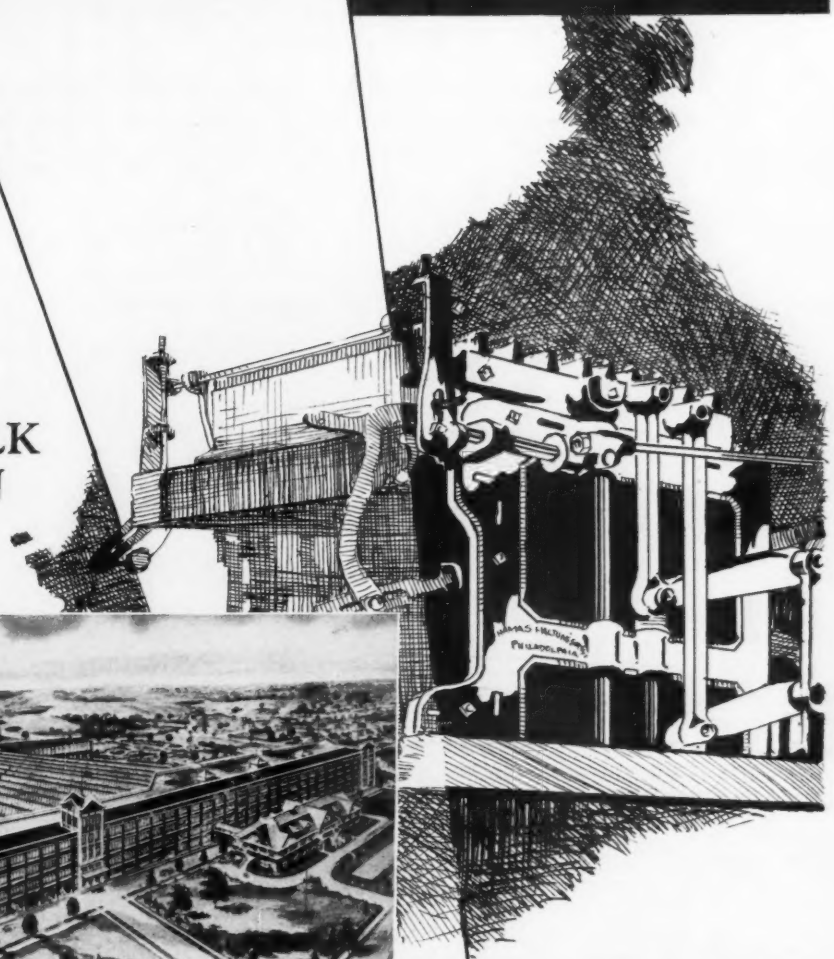
The Pilgrim mills, in the same city, paid 12 percent to its stockholders from earnings made during the past fiscal year. The Charlton mills, making medium grades of combed yarn goods, the Davis mills, the King Philip mills, all in the same city, have gone on making money. The Sagamore Mfg. Co. continues to pay dividends regularly, yet last week the Osborn mill stockholders elected a new set of managers and notified the receiver for the property that it wanted a full examination of the books and a full accounting by unprejudiced parties, before giving up the ghost.

The Chace, Durfee, Stafford No. 2, Conanicut, and some other mills there have gone by the board, the Granite was sold for taxes to the city of Fall River, and other plants were barely holding on.

It is expected that the machinery now in the Appleton mills will be moved South this winter to occupy a plant to be built near the present Appleton plant in South Carolina. It has not yet been stated what may be done with the property left, which does not show the profit the owners expect. There are some other plants whose equipment

THE DUPLAN SILK CORPORATION





HALTON JACQUARDS

THE Duplan Silk Corporation use Halton Jacquards in weaving practically the entire variety of their Jacquard production.

This means unfailing performance and absolute dependability.

Halton Jacquards Stand the Test of Time and Service.

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P. O. Box 1663, Paterson, N. J.
Telephone Lambert 8592-W

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FRED H. WHITE
304-8 Independence Bldg.
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"USE A HALTON JACQUARD AND YOU USE THE BEST"

will be moved South eventually, if it continues to prove profitable to move machinery in that way, but it does not follow that New England as a textile center will decay.

The exodus of finishing plants has been underway for some time, yet it does not appear to the satisfaction of some of the leading finishers that new locations are required to make them have confidence in properties they manage. The Sterling branch of the United States Finishing Company has been profitable for years and it is now being changed over into a plant to finish rayon or other chemical fibers in any way the markets desire. Included in the changes are substantial additions that would equip some good sized plants located elsewhere.

The instability of cotton markets in recent weeks has upset many calculations of New England manufacturers but they are known to be carrying lighter stocks of unsold goods than ever before and still have many unfilled orders to keep them busy most of the Winter.

Cotton Comment

BY H. AND B. BEER.

New Orleans, October 15th, 1927.

Although returns to the government as of October 1st, indicated a yield of 12,678,000 bales vs. 12,692,000 indicated as of September 1st, and notwithstanding there having been no increase in the indicated production during September when the weather was generally favorable, the trade as yet is not convinced that this year's production will be under 13,000,000 bales.

During September and October of last year the crop was added to materially by late fruiting, due to the absence of weevil, the indicated yield having increased from 15,166,000 bales on September 1st to 17,918,000 on November 1st. In fact during that period, especially during October, advices from the interior were general to effect that the crop would not stay picked.

Because of the development of the late crop last year and in recent years, the trade cannot get away from the idea that the top crop is making this year, whereas advices from the interior are to effect, and supported by returns to the government, that there is virtually no top crop this year because of the damage by weevil, and furthermore, unlike last year, there is a great deal of late cotton, due to late planting, in west and northwest Texas, western Oklahoma and in the valleys of the central belt, that could be seriously injured in event of an early killing frost, in which event the indicated crop would likely be reduced all the more.

Of late, however, there has been improvement in the spot demand, which is only natural since consumption continues large, in the United States breaking all previous records for August and September, the higher prices notwithstanding. As a matter of fact the basis is reported as the highest of the season.

Because of the world's indicated supply for this season, including last year's carry-over, the indicated crop, linters, etc., pointing to 20,916,000 bales vs. 24,666,000 last season, some people are of the opinion that there will be no scarcity of raw cotton this season and that the highest prices of the season are behind us.

When one considers that American mill takings and exports last season totaled 19,463,000 bales, we believe that they will come to the conclusion that there is likely to be a scarcity of cotton later in the season if the government crop forecast is approximately correct, especially in the United States where the indicated supply for the season is only 16,011,000 bales. Suppose the givernment is right in its crop forecast, are not the following deductions interesting:

Bales—	This season	Last season
Stock in U.S. Aug. 1st, ex. mill stocks	2,333,000	2,570,000
Indicated crop, lint, government est.	12,678,000	17,977,000
Linters, etc., est.	1,000,000	1,123,000
Indicated supply for United States	16,011,000	21,670,000
Exports for season, if only	9,000,000	11,243,000
Leaving for American mills only	7,011,000	10,427,000
American mill takings, if	7,011,000	8,220,000
		2,207,000
To adjust		126,000
Leaving stock in the U.S., July 31.	None	2,333,000

CENSUS REPORT.

United States— Bales—	This season	Last season
September consumption, inc. linters	706,000	645,000
For two months, Aug. & Sept.	1,413,000	1,219,000

In view of the large domestic consumption and free exports from America, and large spinners' takings, there will have to be a lot of trimming down of exports and spinners' takings to bring them down to above allotments. So far this season spinners of the world have actually taken more than to even date last year—2,891,000 bales against 2,609,000, and exports from the United States to date total 1,467,000 bales vs. 1,665,000 to even date last year.

STATEMENT

of the ownership, management, circulation, etc., required by the act of Congress of August 24, 1912, of COTTON, published monthly at Dalton, Ga., for October 1st, 1927.

State of Georgia, County of Fulton.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared W. J. Rooke, who, having been duly sworn according to law, deposes and says that he is the Business Manager of COTTON, and that the following is to the best of his knowledge and belief, a true statement for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Co., Atlanta, Ga.; Editor, L. L. Arnold, Atlanta, Ga.; Business Manager, W. J. Rooke, Atlanta, Ga.

2. That the owners are: W. R. C. Smith, Atlanta, Ga.; W. S. Cushion, Cleveland, Ohio; O. A. Sharpless, Atlanta, Ga.; J. C. Martin, Atlanta, Ga.; H. H. Kelley, Atlanta, Ga.; W. J. Rooke, Atlanta, Ga.; T. W. McAllister, Atlanta, Ga.; P. D. Hammett, Chicago, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or any other security holders are. None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs containing statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bonafide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. W. J. ROOKE, Bus. Mgr.

Sworn to and subscribed before me this 23rd day of September, 1927. E. L. PHILPOT, Notary Public.

My commission expires March 5, 1931.

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Down to the Last Oil Cup

This is about STEAM ENGINE lubrication

Many, many steam engines in Textile Mills throughout the country are now lubricated with TEXACO ENGINE OILS—down to the last Oil Cup.

The TEXACO Engineer (a specialist in Textile Mill Lubrication) recommends the kind of oil—or grease—and the quantity, to be used for each individual part of each engine.

Satisfaction is guaranteed by an organization of unquestioned standing; and lubrication worries are no longer a part to be put up with.

Call on us at any time to survey your machinery equipment without obligation, but with an assurance of intelligent cooperation toward securing greater power production and greater engine efficiency.

Here is what TEXACO recommends for improved Steam Engine Lubrication:

Sight Feed Oil Cups	TEXACO TEXOL OIL C or D, or TEXACO ALEPH or ALTAIR OIL
Grease Lubrication	TEXACO CUP GREASE No. 1 or No. 3
Circulating Systems (Normal conditions)	TEXACO NABOB OIL TEXACO TEXOL OIL B or C, or
(Under adverse water conditions)	TEXACO REGAL OILS
Crankcase and Splash Oiling Systems (Normal conditions)	TEXACO CANOPUS OIL
(Under adverse water conditions)	TEXACO REGAL OILS

There is a TEXACO Lubricant for every purpose in the Textile Industry

THE TEXAS COMPANY

Texaco Petroleum Products

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OFFICES IN PRINCIPAL CITIES

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

CHARLES E. MULLIN, of Philadelphia, was recently appointed professor of textile chemistry and dyeing in the Textile Department of Clemson College, Clemson College, S. C. He has for ten years been engaged in chemical consulting and research work in Philadelphia and Camden, specializing upon textiles, dyestuffs, detergents, and related problems. During the past five or six years he has published over a hundred papers upon various phases of textile chemistry and dyeing in several countries. During the past summer he published a book on "Acetate Silk and Its Dyes," the first book on either the fiber or its dyestuffs. Mr. Mullin also has conducted a great deal of research on wool and the relation of its composition and structure to the handling of this fiber in manufacture. He is a fellow of the American Institute of Chemists, and is the third American to be elected a fellow of the Textile Institute of England. He is also a member of the leading chemical societies. He obtained the degree of Master of Science in medical research upon the proteins and certain branches of industrial bacteriology or technical mycology Among other college work, Mr. Mullin took two years at the Philadelphia Textile School under Professor Elmer C. Bertolet.

WYLLYS H. TAYLOR, superintendent of the silk mill of the Republic Cotton Mills, Great Falls, S. C., has resigned to accept the position of southern manager of the Slater Manufacturing Company, which is building a plant at Slater, near Marietta, S. C. Mr. Taylor is originally from Greenville, having gone to Great Falls as resident engineer for J. E. Sirrine & Company, in the construction of the mills at Great Falls, remaining there as superintendent of the silk plant.

DUNCAN H. DEWAR, president and treasurer, B. S. Roy & Sons Co., Worcester, Mass., recently spent a few days in Atlanta visiting with Guy L. Melchor, Sr., representative of Howard Bros. Mfg. Co., who also represents the Roy concern.

T. W. HADDLE, JR., has become superintendent of Beaver Lois Mills, Douglasville, Ga., filling the position vacated by John F. Long, who resigned to become superintendent of the Ninety-Six Cotton Mills, Ninety-Six, S. C.

A. G. MYERS has been elected president of the Gaston County Textile Manufacturers' Association, succeeding Arthur M. Dixon. S. P. Stowe is vice-president and W. B. Rhyne, of Cherryville, second vice-president. Mr. Myers is president of Myers Mills, Inc., Gastonia, N. C., and the Citizens' National Bank there.

W. S. MONTGOMERY, JR., assistant treasurer of the Spartan Mills, Spartanburg, S. C., has been made treasurer of the Gaffney Manufacturing Company, Gaffney, S. C., succeeding Alfred Moore. Mr. Moore resigned at Gaffney, though still retaining his interests in the Jackson Mills, at Iva and Wellford, S. C., where considerable extension work is going on. Mr. Montgomery is a son of W. S. Montgomery, president and treasurer of the Spartan Mills, and of the Laurens Mills, Laurens, S. C.

J. M. JAMES has become overseer of weaving at the Glenn-Lowry plant of the Aragon-Baldwin Mills, Whitmire, S. C., succeeding J. F. Chalmers, who has become overseer of weaving and cloth room at the Fort Mill Mfg. Co., Fort Mill, S. C. J. F. Ficklin has become overseer of spinning at the Whitmire plant. He was formerly at the Kershaw Cotton Mills, Kershaw, S. C.

H. W. PITTMAN has been promoted from general superintendent to assistant factory manager of the Bibb Mfg. Co., with plants in Macon, Columbus and Porterdale, Ga. Other changes of interest are that W. A. Woodruff, superintendent of the Columbus plant, has been made general superintendent of all properties with headquarters in Macon; Frank H. Naylor, agent at Columbus, will also serve as superintendent, Russell B. Newton being made assistant superintendent at Columbus. J. B. Parker, until recently night superintendent at Columbus, has been transferred to Macon and will devote his time to efficiency work. L. C. Sheehan, of the accounting department, has been made traveling auditor, it is announced by A. A. Drake, Jr., treasurer of the company.

J. R. MANLEY has resigned as overseer of carding at the Norris Cotton Mill Co., Cateechee, S. C., and accepted a similar position with the Anderson Cotton Mills, Anderson, S. C.

W. J. BUCKNER is overseer of carding at the California Cotton Mills Co., Uniontown, Ala.

B. M. SIMPSON has been promoted from section man at the Hartsville Cotton Mills, Hartsville, S. C., to the position of night overseer of spinning at the Hermitage Cotton Mills, Camden, S. C.

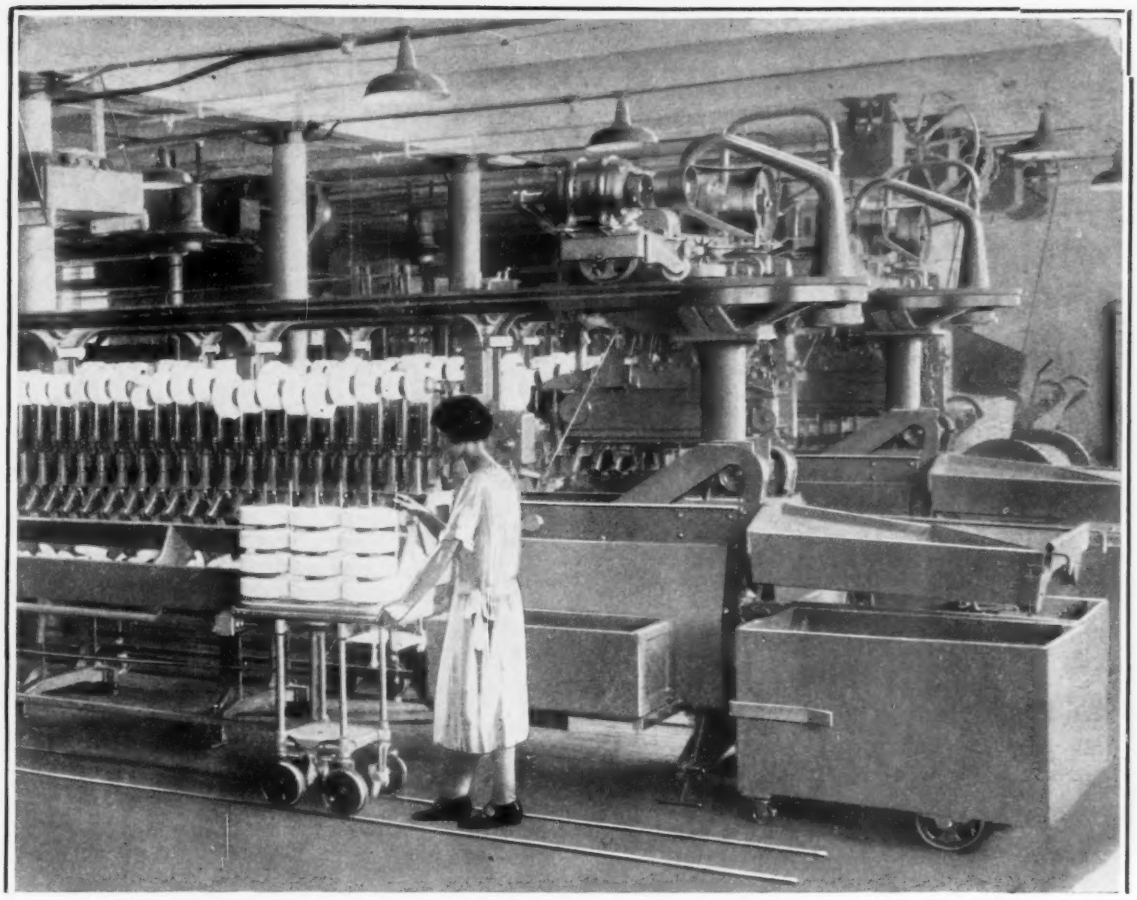
J. B. DUVAL, who resigned some time ago as assistant treasurer and superintendent of the Brookford Mills, Brookford, N. C., has been made treasurer of the Hickory Spinning Co., Hickory, N. C.

J. N. BADGER has become overseer of weaving at the Sibley Mfg. Co., Augusta, Ga. He was recently superintendent of the Appleton Mfg. Co., Anderson, S. C.

W. L. SAFFER has been made general superintendent of the Paducah Hosiery Mills, Paducah, Ky. He was formerly with the May Hosiery Mills, Burlington, N. C.

J. J. KINSEY has become overseer of carding at the Adams Duck Mills, Macon, Ga. He formerly held a similar position at Mills No. 1 and No. 2, Thomaston Cotton Mills, Thomaston, Ga.

F. KILBY HALL, who has been assistant to Secretary Russell T. Fisher, of the National Association of Cotton Manufacturers, Boston, has been appointed cotton technologist at Clemson College, Clemson College, S. C. He will work under the direction of Director Horace H. Willis, of the textile department.



FIGURES THAT CARRY WEIGHT MUST BE BASED ON COMPARATIVES

Consider the following experience of one mill:

Four Barber-Colman 80-spindle Automatic Spoolers, 320 Spindles, replaced *nine* ordinary Spoolers, or 1350 Spindles.

Two Barber-Colman High Speed Warpers replaced *thirteen* old type warpers.

Only *ten* operators are required for the Barber-Colman Equipment as against *twenty-one* for the old type machines.

It is needless to say that the yearly *labor saving* in this mill is a worthwhile item!

BARBER-COLMAN COMPANY

GENERAL OFFICES AND PLANT

ROCKFORD, ILLINOIS, U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.

One Good Reason for U S Better Bobbins

Testing Bobbins for True Running Quality On Customer's Spindle in our Lawrence Factory

After passing this rigid inspection do you wonder that U S Warp, Warp Filling Wind, Filling, and Automatic Loom Bobbins average to run more true and uniform than bobbins bought on price?

Do you realize that good bobbins play a very important part in the production of good yarns?

If you are tired of trying to get better results in your spinning room, look over your old bobbins and make up your mind now to get a trial lot of U S Better Bobbins equipped with U S shields or bushings and spindle-tested for true running.

There is no economy in putting poorly made bobbins on high priced machinery. The results will always be unsatisfactory. Prices on U S Better Bobbins are *not* always high.

Let us quote you. Write, 'phone, or wire

U S BOBBIN & SHUTTLE CO.

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HIGH POINT, N. C. **PHILADELPHIA, PA.** **ATLANTA, GA.**

U S Salesmen are specialists on bobbins, shuttles and spools. Order direct from U S for real helpful and understanding service.

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(For the Spinning Room)

Warp Bobbins,

Warp Filling Wind Bobbins,

Filling Bobbins of all kinds.

A. L. Bobbins or Quills, oiled shellaced; or enameled in our own Enameling Plant

Underclearer and Scavenger Rolls,

Speeder Bobbins and Skewers.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

In conversation with a successful superintendent a few days ago he was telling me of his experience with a young college man who had been working in his mill.

The superintendent was more than anxious that this young man should make good and get in line of promotion in his mill because he needed an assistant badly.

He was not only anxious for the young man to make good because he needed him in his work, but he had known the family for a number of years and wanted the boy to get a start on account of his friendship for the family.

It would seem then that this young man had everything in his favor. Old man "Opportunity" surely was doing his best to get a strangle hold on him.

I had known the young man for a few years myself and had seen some of his work, so I said to the superintendent: "That boy is certainly smart; he is one of the best workers I have seen and I would like to know just why he is not with you now."

The superintendent replied, "Yes, Old Timer, that is all true, and when he first came to me I had great hopes of his making the very man I was looking for, but you know I could not get him to understand 'the difference between education and common sense.'"

By George, that gave me a thought I had never had before—"The difference between education and common sense."

The boy had the education all right, he was a good hard worker, he was of good character, but his head was full of darn fool ideas that were not backed up by practical experience.

The textile graduate should realize that when he gets his diploma he is then starting out to get his education. No, don't misunderstand me; I am 100 per cent for textile education, as my regular readers all know from many articles they have read in these columns, but it is so confounded hard to get the textile graduate to realize that the tall tree did not grow from the little acorn in one day.

Patience is one of the hardest things for any young man to learn, whether he is a college graduate or not. For example, how many overseers can you point out that you know, who, if they had stayed at the mill where they were five years ago, would now be superintendent? It is so hard for most of us to see beyond our nose, as the saying goes, and it is a pretty true one.

You know, brother, that practically all the success in this old world—all the wealth that is accumulated—all the inventions that are worth while and all the best jobs are obtained by men who have been able to see several years ahead and then to have patience backed up with the determination to *prepare* themselves for the future that is sure to come. There is no better way to reason this out for yourself than to look back over the last five or ten years and remember how surprised you would have been if someone had told you the things that would happen that you have now seen happen with your own eyes.

I once bought a piece of land, a small farm, and paid $78.00 per acre for it. A few weeks later I was visiting a large farmer who lived on the same highway about one mile from where my land was located.

This man told me he was working on the railroad as a section foreman at $30.00 per month about twenty years ago and then he began to buy up small pieces of land as he could save enough money to make a payment on it. He now has about 500 acres and said it cost him $8.00 to $12.00 per acre. Then I began to think I had played the fool in paying $78.00 for land not far from him, therefore I put this question to him: "Mr. Broom, if land has advanced from $8.00 per acre to $78.00 per acre in the last twenty years, do you believe it will advance that much more in twenty more years?" and he replied it would. (I immediately felt much better.)

That was in 1912. In 1920 I sold that land for $200.00 per acre and invested the money in rental property in a growing southern town.

Yes, I know that 1920 was a boom year, and that is not a very good illustration, but you know boom years come along about every so often, just like cotton goes down to twelve cents per pound every few years and then back up to twenty-five cents.

Darn it! Don't you see the point? It is the man who can see beyond his nose that seems to have all the luck.

* * *

Do your job a little better than you are expected to and you will eventually draw more pay than you ever expected you would.

* * *

The man is not living who cannot make himself a more valuable man in his line of work if he will only try.

How many opportunities to improve your job did you pass up yesterday?

Do you ever take stock of yourself?

Constructive Auditing

An independent audit is to be regarded always as the means to valuable advice from the auditor or auditing firm.

Too often, auditing service ends with the report of the financial condition of (name) as of (date).

Auditors should be equipped—and should be employed—to offer recommendations in connection with method, policies, financing, etc.; to furnish comparative statistics intelligently prepared; to point out how mistakes and waste may be eliminated, and pitfalls avoided.

Of course, *every audit should be a Detailed Audit.* But whether it be *Detailed, Semi-Detailed* or *Balance Sheet,* it can, *and should be made to,* serve as the basis, not only of the financial report, but also for constructive help.

With the business man's appreciative understanding of this help, and the cooperation of progressive Public Accountants, Auditing becomes *Constructive* and offers its greatest value.

ERNST & ERNST

ACCOUNTANTS AND AUDITORS—SYSTEM SERVICE

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PHILADELPHIA	BUFFALO	GRAND RAPIDS	AKRON	DAYTON	KANSAS CITY	MILWAUKEE	FORT WORTH
BOSTON	ROCHESTER	KALAMAZOO	CANTON	LOUISVILLE	OMAHA	MINNEAPOLIS	HOUSTON
PROVIDENCE	PITTSBURGH	ATLANTA	COLUMBUS	HUNTINGTON	MEMPHIS	ST. PAUL	SAN ANTONIO
BALTIMORE	WHEELING	MIAMI	YOUNGSTOWN	NEW ORLEANS	DAVENPORT	INDIANAPOLIS	WACO
RICHMOND	ERIE	TAMPA	TOLEDO	JACKSON	DENVER	FORT WAYNE	SAN FRANCISCO
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ALL KINDS OF
RUBBER COVERED ROLLS
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"*The* Size That Satisfies"

Sizing Compound "V" — TALLOW, GLYCERINE, GUMS, DEXTRINE, PRESERVATIVE, WATER

Contains no Chlorides, no Mineral Salts, and no Mineral Oil.

Sizing gums and weighting gums.

Our prices are right for the quality of products.

Emulso Tallow — TALLOW, WATER

The perfectly emulsified product. Contains no Gums, Acids or Alkali.

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

What is the Cause of Cracked Selvages.

EDITOR COTTON:

I would like to see in COTTON some discussion as to the cause of cracked selvages, when cloth is mercerized and dyed, giving the causes and remedies. Our cloth is made of 30s and 33s carded warp with the following wet twisted selvage: 16 2-ply ends of the warp on each side, having 12 turns to the inch.

Will some of your readers please offer their opinions as to whether the use of a dry twisted selvage would tend to prevent this cracking? Any information which you may publish will be greatly appreciated.

CONTRIBUTOR No. 3005.

Selecting the Man.

EDITOR COTTON:

In the February issue of COTTON, a question was asked by "Contributor No. 1033," stating that he had an overseers' position open and requesting opinions as to whether a fixer or a textile student working in the mill should be promoted to the place.

I read the article at the time and began to wonder just which man might best fill the place. I did not answer his question then, either to COTTON or to myself, but since the May issue contained several opinions on the subject and the September issue adds still two more, my "thinker" has started working again.

Now, if this contributor had asked just for all the fellows in favor of the fixer to answer his question, I don't think he would have gotten any more encouragement to put the fixer on at once. One man says, "I would advise putting the fixer on. Give him a square deal." Another says, "A child must creep before it can walk. Let it be so in this case." Another, "With all respect to the student, why hesitate?" and one fellow even says, "Read the Golden Rule." (He might have added, "But be sure you don't take your eyes off the fixer while you read it.") And so they wrote—all in favor of the fixer.

I guess by this time "Contributor No. 1033" has made his change. I wish, by the way, he would let us know which he chose. And too, he might have been like the farmer who called in his neighbors to get their ideas as to where to build his new house. One said, "I would sure build down here by the spring, where it would be convenient to the water." Another said, "Never do that. Take the high and dry spots," and a third suggested, "Get back from the road and have the spring in front," and still a fourth said, "Build close to the road and have the spring in the back." The farmer, becoming more and more confused, finally said, "You damn fellows go on back home. I'll just build it where I want it." So maybe the change has already been made, but nevertheless this contributor wanted opinions, and so far has obtained them from only one direction.

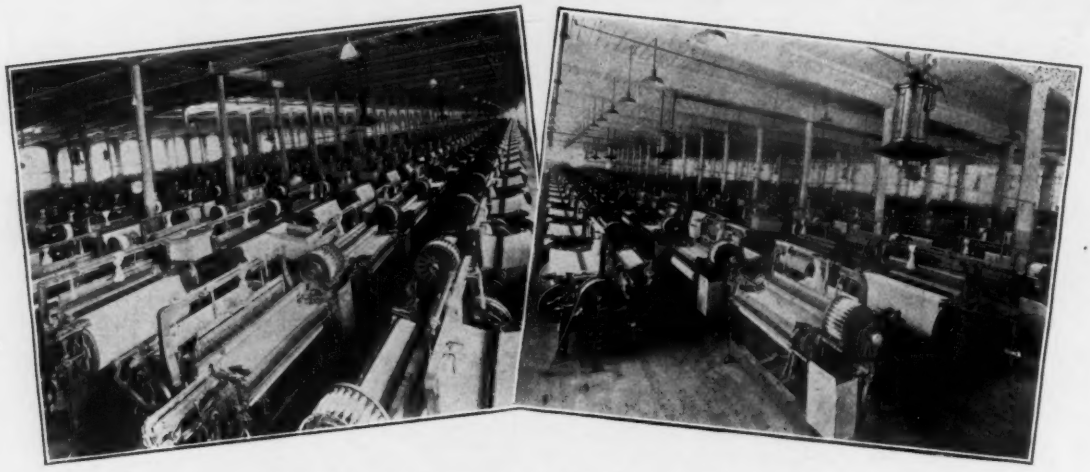
Answer me this: What does a fellow take a textile course for? Why do mills fool with these textile students? Why did this man have this student in his mill? I am quite sure he had never pictured him as being an ideal oiler or doffer. Suppose nobody studied the theory of textiles. Suppose nobody would back up a fellow who was trying to get the theory of textiles. Where would we get in a few years? Where would medical science, electricity, and a thousand other things have been, if it had not been for the student?

Authorities tell us that cotton spinning is possibly the oldest of industries, and at the same time they tell us that it has not kept pace with other lines of manufacturing in regard to improvement. Why is this? Maybe we have been leaving too much to the fellow who can do them just because he has seen somebody else do them, and not because of mechanical ability and learning of his own. You know lots of fellows, and some fixers are included, who do things more or less by habit; they have done them over and over until it has become mechanical to do them in that way.

This man's student has been in his mill for eight months; in school he learned the whys and wherefores of the different machines. He learned how important it is to have the machinery functioning properly. He studied roll setting, he studied drafting, and humidifying, and general manufacturing from different angles, and now he comes in and has been applying this learning for eight months.

What has he been doing for these eight months? This superintendent expected to use him some time, so I wouldn't think he has been cleaning or sweeping. Let's think of him coming into the mill with a background, a determination and a keen interest in applying his learning. With these advantages, eight months could do more for a fellow than a great many more months could do for one without them. What are you going to expect of a fellow who takes a textile course? Does he have to stay in the mill as long as the fellow who was "raised" in the mill, to get an overseer's job? If he does, why go to all the expense and hard long hours of study? And after all, this is not a matter of rewarding the faithful, or the issuing of any gold medals for long and distinguished services—he doesn't even mention how long the fixer has been with him—it is in fact the choosing of the man who will make the mill the best overseer.

I would surely bank on this: With the background, the



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theory, and eight months in the mill, and all other advantages the student most surely has, if he is a likeable fellow, he should make a real good overseer.

C. A. B. (GA.)

What Makes a Loom Lose Quills?

EDITOR COTTON:

I would like to ask, through the "How Other Men Manage" department, for the experience of some of the readers as to what will cause a loom to lose quills on the change. Our looms are 36-inch E Model Draper. The transferrer seems to be set properly, transferring the filling straight in the middle of the shuttle. The speed is about 160 picks per minute. We do not use the feeler motion, the change being made from the fork. G. T. (GA.)

Weaving Bunched Cords Without Slackening.

EDITOR COTTON:

In your April issue, "F. T. (Conn.)" asked a question as to how bunched cords which are run on the bottom beam together with the ground ends be slashed so as to weave in the loom four ends to the dent without undue slackening of these cords, such as will cause the drop wires to fall.

A reply from "T. M. (Tenn.)," in the May issue, suggested putting the cord in on a separate top beam at the loom. My experience is that with this arrangement, there is trouble in keeping a uniform tension on the top beam, unless there are a sufficient number of ends to permit the proper friction, and usually this material is run with a very few ends. Tight cords will cause wavy cloth in finishing. One of the biggest objections to using the top beam is that it is impossible to get the beams to run out together, making waste of yarn.

Again, in the July number, "C. W. (Canada)" offered a similar suggestion.

The next reply I noticed was in August COTTON, signed "P. T. S. (Maine)." This man suggested having two stands made, one for each side of the loom, for supporting an auxiliary vibrating rod. This vibrating rod to be connected at each end to the stands by coil springs. The cord ends are run over this vibrating rod, and as the cords run slack, the coil spring keeps an even tension on these cords. I have tried this out and find the objection to it is the fact that every now and then the cords must be pulled tight again and the slack yarn cut off.

Having reviewed the suggestions already published, I will now outline the method we use very successfully on work of this kind, which I believe is an improvement on those mentioned. If there are enough ends, the cord yarn should be run on a separate section beam, and preferably this beam should have more tension in slashing than the ground warp. The cord section beam is placed behind the rest of the beams on the slasher, and the yarn from this beam is run over the top of the other beams and under the squeeze rolls, but not under the immersion roll. A comb is inserted in this sheet of yarn just behind the size box, and the ends are gathered in bunches, one bunch to the dent, just as they will run in the loom; in other words, if a four-end bunch cord is run in the loom, there will be four ends per dent in the comb behind the size box.

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size is picked up to prevent chafing in the loom, but there is not enough size to stiffen the yarn to the extent that the ground yarn is stiffened. In laying the cords in the slasher comb in front, the bunch cords are laid in exactly as they are in the comb behind the size box, and there is no attempt made to split these ends up; they are run up over a roller higher than the split rod, and are brought back down through the comb and wound onto the same beam with the ground yarn.

In the pattern lay-out for the slasher comb, it is advisable to let the dent containing the bunch cord in the repeat have less ends to the dent than the ground; in other words, assuming that the ground warp is laid eight ends per dent in the slasher comb, it would be advisable to let the dent containing the bunch cord have only six ends, which would be the four ends in the bunch cord plus two ends from the ground. This causes a soft spot where each bunch cord comes, but this is desirable in that it will prevent, to a measure, some of the slackness in the loom.

In the loom, there are no particular pains to be taken, if the proper attention is given to the slashing. Since the bunch cords are still stuck together exactly as they were laid in on the slasher, they will naturally be drawn in four ends to the drop wire and heddle. Since there is less size on these ends than on the ground warp, the bunch cord will naturally be more flexible and will bend more readily around the filling picks. This will cause an even take up on the bunch cords, exactly as on the ground ones. The important point to bear in mind is that the bunch cord is not split up in front of the slasher, but each cord is stuck together by the size, and remains so throughout the weaving process.

Sometimes it requires a good deal of experiment to decide upon the tension on the section beam holding the bunch cords, and the amount of size which they should take up. If by running the cord ends under both squeeze rolls, too much size is taken up, they should then be run only under the front squeeze roll. In this way the amount of size will be reduced. CONTRIBUTOR NO. 300.

Winding Yarn on Warper Beams.

EDITOR COTTON:

Referring to the query of "Y. M. (S. C.)" as to the relative merits of the two methods of putting yarn on warper beams, we have tried both methods in our plant—on average sheeting constructions—and several years ago changed from the "under" method to our present system of running our yarn over the beam. We feel that there are sufficient good points in this method to offset the disadvantages.

Perhaps the greatest advantage in the over method is the fact that you have a positive tension on each pieced-up end, as the warper tender can hold the end until the beam has caught up the lost distance, where in the under method the tender has to "shoot" the pieced-up end, causing kinks.

In the over method the warper tenders' clothing will not be caught, which could cause frequent and often serious accidents with the other method.

In starting up the warper in the over method, the ends are pulled down and held until the beam is started up. In the under method the bunch of ends is "shot," which causes excessive waste, when the beam runs out.

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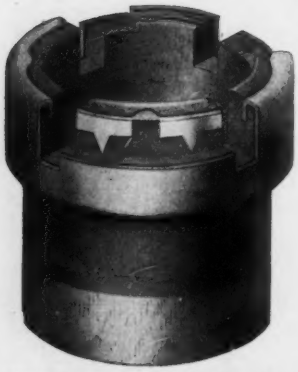

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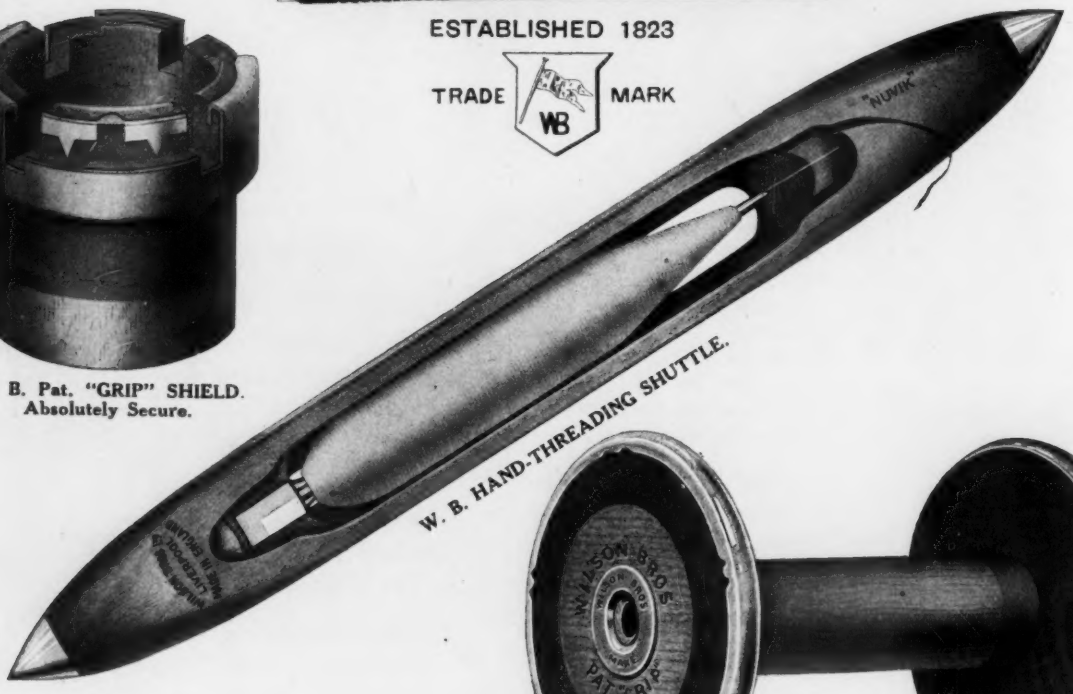

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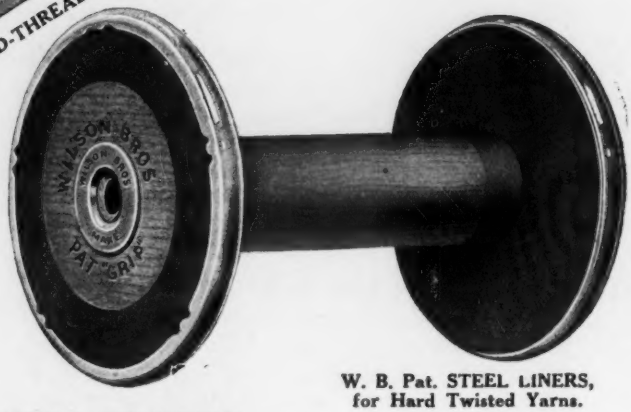

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In the over method, high and low selvages are easily detected, and when the expansion comb is adjusted the ends straighten themselves out more quickly and are seen by the tender on account of the better light. Also, the ends are more accessible to the tender when cutting out on account of required yardage.

When a fan is used on the warpers the over method throws off dabs while the under method holds them, causing trouble on the slashers and looms. When a loose end comes up it is more easily pieced up as it can be seen quicker.

About the only disadvantage of the over method is that in piecing up an end which is hard to find, the warper tender will separate several ends, and roll them together while she ties a knot. Constant fighting this will eliminate a great deal of such trouble.

In running short samples the over method is much more positive than the under method.

W. D. (GA.)

EDITOR COTTON:

Answering "Y. M. (S. C.)" concerning the relative merits of two methods of putting yarn on warper beams, will say that I cannot see enough difference to fuss about, although I think that running under has a little advantage over the other way, which I will try to explain.

In running under, the warper tender has less trouble in finding the broken end and does not have to divide the yarn in order to get this end in proper shape to tie up, whereas, in running over, the tender does have to divide the yarn with the fingers, which makes no difference so far as the warper is concerned, but when this divided yarn runs through the size box in this rolled-up condition and then strikes the dividing rods and comb on the slashers, we think that it causes more or less breakage that would not occur if running under.

I cannot see why there would be much difference in the running of the warper one way or another. There is a little more strain on the yarn running under, because at the start of the empty beam the yarn is being pulled almost, if not quite, straight down, and as the beam gets full it is pulling the yarn at somewhat of a slant and down under the little front roll of the warper. If this additional strain would cause more breakage it should all be between the front roll and the beam and not back in the creel or in the machine itself.

Personally, I prefer running under for the reasons already stated and because there are less crossed ends at the slasher and because the warper tender does not as a general thing have to turn the beam so much before the loose end is found.

There are a good many things that will cause the ends to break on the warpers, among them being the end itself. If the yarn is not good there will of necessity be lots of breaks, but assuming that the yarn is all right, we would suggest that the warper be gone over to see that everything is properly set up and working freely. Badly worn skewers will cause a world of breaks. Crooked beam journals should be straightened and the creel should be set at the proper angle to insure as little friction on the yarn as possible.

"Y. M." states that in running over he has less breakage, but it is harder to stop and start evenly. If he hasn't a balance wheel on the cone shaft I would advise that he try that, whether he runs over or under.

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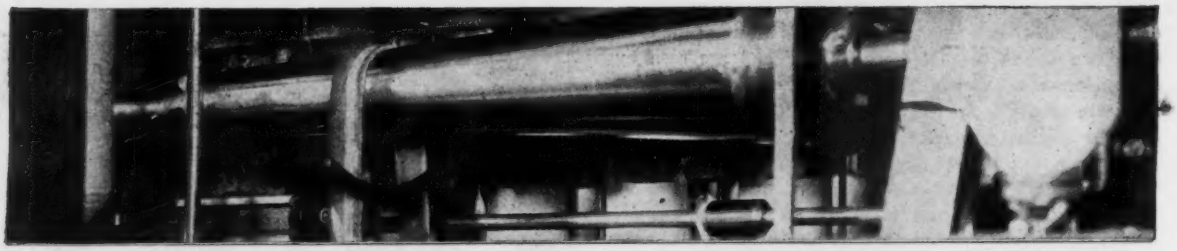

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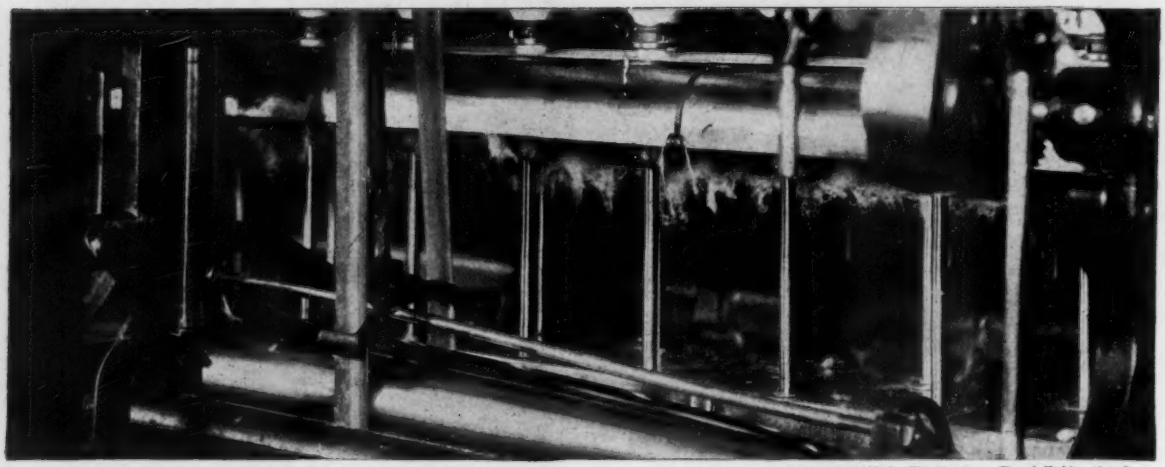

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Ball bearings on the measuring roll are mighty good things, and help to save waste by running out more evenly on the slasher.

It may be that "Y. M." already has a fan on his warpers, but if not, I would like to say that this is a good investment for both the warper and the loom. If properly made and set up they will prevent lots of breaks and will keep a good deal of loose lint from going through to the slashers and weave room. The best fan that I have ever seen is a home-made affair consisting of pieces of four-inch belting cut in 8-inch lengths and riveted to a piece of one-inch square shaft alternating around the shaft and each piece set a little inside the other so that it covers all the space throughout the length of the shaft. The shaft is turned down at each end to fit boxes that are set up at the proper height on each end of the warper frame.

In conclusion, will say that the writer did not start out to lecture on warpers, and may have said lots of things that "Y. M." has been knowing for years, but my object is to help, and if I have made one statement that will be of help to him, I will be content. J. I. M. (GA.)

EDITOR COTTON:

I note the suggestion for discussion on the two methods of putting yarn on warper beams.

We are at present running the yarn on our warpers down and under the beams and find it to be very satisfactory. We think that it is much easier to find a broken end, and we find we do not have as many crossed ends come up in the warps as we did when we were running the yarn over the beams.

We have also had the discussion up as to which way causes the most breakage and after running tests on warpers run each way, we cannot see enough difference to tell whether one way is any worse than the other.

We are running warp yarns from 5.50s to 17.00s, all running the same way on the warper and find that by running the yarn down and under the beam that the yarn is packed on the beam more evenly, which naturally gives us a better selvage.

From the experience we have had we find that the method as outlined suits our particular conditions better, and I shall be much interested in reading any other opinions which you may publish on this question, so as to get different ideas of other mills' experience. J. R. (GA.)

EDITOR COTTON:

Regarding the running of yarn on warper section beams over and under the beam, we are running the yarn over the beam, probably because it has been done that way heretofore. We have not experimented with running it down and under the section beam. On account of the sharper angle when running the yarn down and under the section beam, I can readily see why there is more breakage of ends. We have about discontinued using the warpers and will use the Warp Compressing Machine Company direct beamers instead—our work is all heavy woven goods—and hence will have no occasion to experiment with the warper section beam.

On the direct beamer, which beams direct from creels, we have found that the yarn lays smoother, firmer, and more evenly on the loom beam when running the yarn down and under than when running over the loom warp beam. It is, however, much more dangerous to run the yarn down and under, as if the attendant should in any way lose his balance and any part of his body or clothing should drop into the revolving beam, he would be drawn in and mashed severely before the machine could be stopped. We have placed guards across the front of the direct beamer to prevent just such accidents.

CONTRIBUTOR NO. 777.

EDITOR COTTON:

We have twelve warpers running on 30s yarn, two with the yarn going over the beam and ten with the yarn under the beam. Up until three months ago we ran them all with the yarn going over the beam.

Our reasons for changing to the yarn running under the beam were:

(1) We were troubled with draw backs and found when the yarn was running over the beam the warper hand experienced more difficulty in picking out the right end, thus causing a draw back.

(2) It is much easier for the warper hand to start the fresh beam when the warp is creeled.

(3) We also have cut out slack selvages, although this could be done with the beam running either way. In fact, from my own personal observation, I should think it would be easier to keep the selvages regulated when the yarn is running over the beam.

As to end breakage, I do think there is a bit more strain on the yarn when it is run under the beam but somehow we seem to get much better results running the yarn under the beam. We seem to get a better production. Our warper hands like it better. S. W. (S. C.)

EDITOR COTTON:

In answer to "Y. M.'s" inquiry as to the best method to run yarn on warper beams, will say that I have always found it more satisfactory to run the yarn down and under. All loose ends can be readily detected and tied up straight without causing crossed ends to come up when slashing.

The only advantage I can see in running the yarn over the beam would be to have a more direct line of pull from the spool in the creel.

If "Y. M.", or anyone else, has found other advantages, I would be glad to hear of them through COTTON.

A. N. (S. C.)

EDITOR COTTON:

In answer to "Y. M. (S. C.)" in the July issue of COTTON concerning winding yarn on warper beams, will say that we did wind them as he says he does, over the beam, in front and down to the warper drum. In doing this we found that we had less trash and other flying matter to catch in the yarn and make bad or gouty places in the warps. Going down on the back side, or on the side next to the drum we had more chances of catching this trash and flying matter that is common around warpers.

In running the yarns this way they are always high up on the road to winding around the beams, and the "fly" will hardly get up this high to get caught in the path of the yarn and to wind up around the beams. This, in the writer's opinion, is worthy of some thought and consideration, and as far as finding the end is concerned, this is a matter of practice and when once the operator gets accustomed to this practice it's just about as easy as the other

way and a safer way to determine whether the ends are straight before tying up the threads that have broken back.

Then there is, in the writers' opinion, less strain on the yarn by its going straight over the guide wires and onto the beams and around in this way. At the present time this mill is on the high speed spooling and warping system, having gone off the old time spoolers and warpers, and, by the way, this system is proving to be a considerable improvement over the old system in the way of preparing the yarn and making it better in its operation. The soft places in the yarn are being taken out, that is, when a soft place comes up in the yarn the thread will break, and in tying it, it is replaced with a weaver's knot, so when it gets to the warpers and the looms, the soft places that usually occur in yarns are out and a good knot instead, which means that there is not a stoppage on the warpers or the looms for this defect.

In this particular case, although it sounds out of the ordinary, this department was using 31 operatives in its spooling and warping department. Now, with the high speed machines it is operating with 14 operatives and getting the same work through that the old machines did and is getting the yarns better prepared for the weaving. No highly paid expert is necessary to keep the machines in operation, as one (and I think so) would ordinarily think. We use only an ordinary section man. Of course he has to be on his P's and Q's so to speak to keep things straight. You do not carry so much yarn in stock as you do on the slow speed warpers, because you can run a beam of 34,000 yards in an hour and ten to an hour and twenty minutes, and about ten to fifteen minutes for creeling the warper and starting it up again. T. A. D. (Ga.)

Set Draft and Twist Gears Properly.

EDITOR COTTON:

"My work is going terribly bad. The spinners can't keep the ends up. I wonder what the matter is?" How often do we hear overseers of ring spinning say that! Many times I have heard that same question asked: What is the cause?

There are quite a few overseers today who do not give serious thought to the many things that may be done in their respective departments which will benefit the quality of the yarn, as well as improve the breaking strength and get more evenly spun yarn—a proposition which many overseers are trying to achieve. Some are successful. Others can't seem to find the cause for their lack of success.

One item I will discuss is the proper setting of draft and twist gears. How many second hands or third hands, also called section men, who are changing draft or twist gears today, do it properly? To many men, changing gears is simply taking out a gear and inserting another gear in its place, pounding the gear stand back into place with a change wrench, and starting up the frame. Then they consider they have properly executed their orders. Do these men know whether the gear is too deep in mesh, or not deep enough? Have they ascertained this? Are they sure that after this change, the yarn will be good and strong?

A gear too deeply meshed will cause a vibration and a grinding noise which is not pleasant to hear, while a gear not set deeply enough will cause a backlash on the back roll gear, which will produce uneven yarn and may also make what is termed cut yarn. I will tell of one particular mill which used to change the draft gears by the hammer method, the section hands not having been taught correctly. When I went there I did not censure them; I took them along with me and we re-set all the change gears in that room in the proper way. In a short time there was a great change in the spinning; less ends down, etc. Before the change the spinners had a difficult time getting their cleaning done. After the change I noticed that the spinners did their cleaning and seemed to have time to rest occasionally. The spooling department noticed the better yarn being spun, and the warper tenders also benefited.

This simple thing goes to prove that things which may seem to be of a trifling nature, if looked into seriously, and with good sound judgment, will be of great benefit to the work and lighten the cares and worries of the overseers.

S. T. (R. I.)

Finishing Linen Cloth and Toweling.

(*Continued from page* 19.)

neath the cloth) by means of strong volute springs.

The spirals are lubricated by means of a well-oiled strip of leather or woolen plaiding resting on each of them; that for the upper or second spiral is seen at *K*. The short fibers that are sheared from the under surface of the cloth and known variously as fluff, caddis, etc., usually drops to the floor, but sometimes special receptacles are fitted to catch it as it falls. The fluff from the second or upper spiral, which otherwise would drop on to the upper surface of the fabric, is caught in a covered holder seen at *L*, and formed by a continuation of the holder for the second straight blade. Where dust extraction apparatus is fitted to these machines, the branch suction pipes are connected to these two receptacles whence the dust is drawn through to the main duct leading to the exhauster and separator.

The machines work more or less continuously. Immediately one piece is nearly finished, a second piece is sewn on to it. When the thick junction of the two pieces (the sewn portion) is passing the cutting knives, the handle *M* is pulled over, and operates an eccentric which pushes back the top spiral and its respective holder. This forms a gap between the upper edge of the bed *J* and the spiral, and thus permits the sewn ends to pass the cutting knives in safety. Wide machines are more commonly used than narrow ones. The former permit 2, 3, and 4 narrow width pieces to be cropped simultaneously and secure great economy in time.

Figure 4 illustrates a quadruple cropper produced by the same firm of textile engineers. It is really two double machines arranged in series, but, in this particular example, auxiliary parts are fitted for scrubbing and brushing the fabric. The scrubbers consist of a pair of wooden beams or rollers round which rough ropes are tightly coiled. As the cloth passes between these covered rollers, it is more or less effectively cleaned before passing between two rotary brushes which raise the loose fibers from the surfaces of the cloth.

The general construction of the machine is similar to the double type already described with reference to Fig. 3. It may be necessary to add that in wide machines the belt pulleys and belts which drive the spirals are duplicated at the opposite end of the machine to that shown in the reproduction. Hence, the long spirals are driven from each end,

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and a more even and regular turning moment is thereby secured.

In the quadruple machine illustrated in Fig. 4, the cloth *N* passes over and under the tension rails *P*, which are used in preference to the rails *H*, Fig. 3, and then up through the casing Q which encloses the scrubbers and rubbers. It is then led over a guide roller *R*, and then between the front edge of the bed *J* and to the first spiral *S*, where the first cropping operation is performed. The cloth then passes downwards to the second spiral, and up-

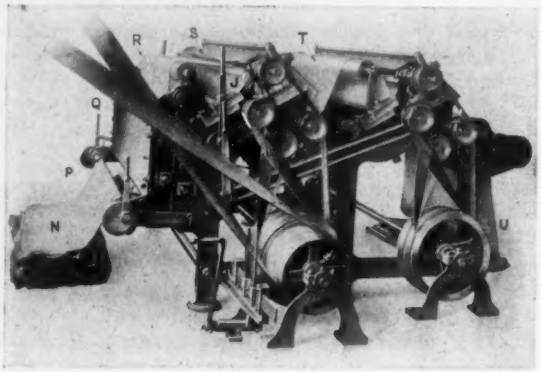

Fig. 4.

wards over the guide roller *T*, whence it moves to the third and fourth spirals in the second half of the machine. The pulling or delivery rollers are situated in the usual position at the delivery side of the machines; in wide machines, or where heavy cloths have to be dealt with, these rollers are sometimes fluted in order to secure a better grip of the fabric and so prevent slip. The cloth is finally delivered on the floor in front of the machine as seen at *U*, Fig. 4, or else on to a suitable cart.

(To be continued.)

Oil Spraying and Vacuum Stripping.

EDITOR COTTON:

I went visiting this morning to see how things were run in a card room where a friend of mine has charge. At present they are on Arkansas cotton, of a grade I judged to be low middling, and stapling barely an inch and a sixteenth.

He seemed to be making a very even roving, although the bobbins in his speeder creels were a bit dirty. However, when I saw the condition of some of the doffers and cylinders, I knew where the dirt was coming from. He has been after the management to re-clothe some of his cards, and I guess he will get his wish.

But to get down to why I am writing this letter, he has his openers equipped with the Breton Minerol process of oil spraying, and it seems to work fine. The card room is very low, and yet that room was as free from dust as it is possible to get it. As a dust killer, the oil spray certainly does the trick. He is using .03 per cent oil at present. When they first installed the system, they used a little too much oil and the card clothing became gummed, although I could see no ill effects from that cause today.

They are also using the vacuum stripper, and putting the brush on once a week. The vacuum stripper is well liked there. CONTRIBUTOR No. 564.

On Taking the New Job.

EDITOR COTTON:

I want to say some things to men who have to change from one job to another which I think would be helpful to all.

To start with, on entering a new position it is well for one to look things over for a day or so, and if they are not just as desired, make notes of the various changes in mind and make careful inquiry as to why things are done thus and so. There may be conditions existing which do not appear on the surface and the man holding the position formerly may have adopted a system to suit the conditions. Changes in systems should not be made until conditions have been thoroughly investigated and some idea is formed as to what the results would be if they are made.

I should like to caution the new man to remember that the employees under him may have been working under the orders of the other fellow for years, their minds habitually running in a certain channel, and it is too much to expect that they will grasp new ideas at once. Therefore, it is his duty to explain to the men his reason for making certain changes, trying to get them to see things as he sees them and explaining to them the benefits that both they and the mill will derive thereby. He should not attempt to do things in mysterious ways, as this will cause suspicion among the help and keep them guessing and wondering "What is he up to now?"

The man in charge should never expect a man to do a better job than he would do himself. He should try and reverse his position now and then—place himself in the other fellow's position.

Some folks, when they get to the position where they can give orders, try to see how "hard boiled" they can be with their subordinates, and are always in "hot water" with some one. In other words, they get too hard to please, and very few care to work under them. If a boss man, regardless of what position he occupies, takes his assistants into his confidence and explains to them what he wants done, and why, he will very seldom have any trouble with the help and they will have great respect for his orders and will try to carry them out. There are instances where one meets a fellow who is set in his ideas, and who can't see any good in what his superior is explaining to him. Now my advice is not to multiply words, but replace such a man at the first opportunity.

No train of gears, one having a broken tooth, can run smoothly. The same rule holds good in an organization. One fault-finder will cause discord and break up the peace and harmony existing in the organization.

When the under-graduates get their orders they should carry them out to the best of their ability, and the man in charge should make it a rule to follow them up and see that every one understands his part and plays it. I am a firm believer in running an organization under military rule. To wit, at all times carrying out the orders of the superior officer, not stopping to question him. It should be borne in mind that he is responsible to some one higher up and the results are charged to him, and not to the subordinate. The order should be thoroughly understood before it is executed, or a blunder may cost the one making it his job.

Running a job does not necessitate having a college education—a convenient thing to have—so much as knowing how to get the other man to carry out the orders given.

A man will never lose any prestige either, by the way, on account of taking the time to explain his wishes to the man who is taking orders from him. Every man has enough self pride to at least think he has an understanding brain, and when he fails to receive the respect which he feels is due him, he does not show respect to his superior.

By giving the other fellow more consideration and thinking less of self, we can make our surroundings more pleasant. A smile is far more effective than a frown.

O. T. (N. C.)

Why the Type Variations in Flange Rings.

EDITOR COTTON:

Some discussion on the relative merits of a No. 1 and No. 2 flange ring for spinning, on 60s yarn was requested by "Contributor No. 2625" in the August issue of COTTON. This man wanted readers to give their reasons for their preference.

I prefer No. 1 flange ring for several reasons. The No. 1 flange ring will give a 1/16-inch smaller outside diameter with the same inside diameter; in other words, a man can run a 1 5/16-inch No. 1 ring in the same holder in which he used a 1¼-inch No. 2. By substituting the No. 1 a man could put more yarn on the bobbin and use a heavier traveler together with a smaller circle traveler which will give more wire in the stock of the traveler. Because the friction on the traveler is reduced with the No. 1 flange ring, there is half the pull on the traveler on the No. 1 flange ring, and on fine yarn this is a mighty important point.

I notice your correspondent says that for 60s he uses 1 5/8-inch ring, 2½-inch gauge frame with separators. In my opinion, he would benefit by using a 1½-inch No. 1 flange ring. This would, as explained previously, give him a 1/4-inch wider gauge, which would permit him to take off the separators, which are a necessary evil, and would give him ten per cent increase in speed, because with the larger ring and separators he has to use more twist than would be necessary, and in addition to the weakening which the twist causes in the yarn, there is also the slower front roll speed which the extra twist makes necessary. Also, it would be possible for him to put more yarn on with a 1½-inch No. 1 flange than on a 1 5/8-inch No. 2 flange ring; he can use a heavier traveler on it.

F.R.(GA.)

EDITOR COTTON:

I notice that "Contaributor No. 2625" is inquiring regarding the relative merits of No. 1 and No. 2 flange rings for 60s yarns.

We make all kinds of fine yarns, but since I have never used the No. 2 flange ring in the past 15 years, I cannot venture an opinion as to the respective merits by way of comparison. The mills I look after were originally equipped with the No. 1 flange ring and it is quite satisfactory.

Lack of experience with the No. 2 flange prevents my giving a reason why the No. 1 flange ring is preferable, but if I were buying machinery for a new mill I would specify the No. 1 flange, because my experience with them for 15 years proves them to be very satisfactory.

I realize that this does not answer the question, but it may be of interest in connection with the discussion.

W.G.(N.C.)

EDITOR COTTON:

I shall be glad to give what help I can to the reader who asks for information regarding No. 1 and No. 2 flange rings.

From my own experience and observation I believe that preference should be given to the narrower flanged ring. The reasons for this are very simple. By adopting the narrower flange a stronger traveler can be used without any increase in the weight of the traveler. Naturally a stronger traveler will not wear out or fly off as frequently as one of the same weight which is made from a finer gauge wire. The number of broken ends will in this way be reduced.

I think this should cover the question fully. Conditions in various mills, such as counts, speeds, etc., in no way enter into the matter of the flange to use.

C.C.(N.J.)

EDITOR COTTON:

Replying to "Contributor No. 2625" as to the comparative merits of a No. 1 and No. 2 flange ring for 60s yarns, under the conditions he outlines in his letter in the August issue of COTTON, it is a bit risky to give a dogmatic answer to a problem that is open to so many angles as the one in question. That there is among spinners a considerable difference of opinion regarding the advantages of the No. 1 versus the No. 2 flange may be seen by looking over some of the back copies of COTTON.

Personally—perhaps because of having handled large quantities of 60 yarn in the past—I prefer the No. 1 flange ring because a stronger and longer wearing traveler can be used for the same weight than would be the case with the No. 2 flange. The contributor does not state what spindle speed, what roll speed, or what type of cotton he is using. All of these factors have some bearing on the running of the work. And it is presumed that ultimately the contributor desires informatoin that will give him some idea of how the best results may be obtained.

In this connection, I would say that the following details on 60s have been successful, and would draw attention to the fact that in many respects the conditions are identical with his:

Count of Yarn, 60s.
Cotton, Egyptian, Sea Island or long-staple American.
Diameter of ring, 1⅝ inches.
Flange, No. 1.
Traveler, No. 10/0.
Twist per inch, 3 to 3½ times the square root.
Spindle speed, 7,500 to 8,500 r.p.m.

CONTRIBUTOR NO. 803.

EDITOR COTTON:

In reply to the question of "Contributor No. 2625" appearing in the "How Other Men Manage" section of the August issue of COTTON in regard to No. 1 and No. 2 flange rings on spinning frames, will say that from past experience in ring spinning I am in favor of No. 2 flange rings for spinning any counts of cotton yarn from 20s up to fine counts. No doubt many spinners will not agree with me when I claim that better spinning can be had with No. 2 flange rings than with No. 1. Perhaps I would favor No. 1 flange rings if I had not had years of experience with both kinds.

The reason for the difference in the spinning is owing to the fact that the travelers for the No. 2 have to have a

larger circle and have to be thinner in order to weigh the same as travelers for No. 1 flange rings. When the travelers for No. 2 become worn they will fly off sooner than the travelers will on No. 1 flange rings. This I think is much more important than to have travelers stay on when worn enough to keep causing the ends to break.

I have used narrow square point travelers, also narrow round point travelers, but I do not care for either, because they do not fly off as soon as the thinner, wide back round point travelers.

Spinners should be instructed to put on new travelers when the old ones are worn enough to cause the ends to break.

For good running work travelers should be changed at least every two weeks.

I had charge of spinning in a mill that used both kinds of rings. I had a number of frames on 60s filling for about four years. Part of the frames had No. 1 flange rings and part of them had No. 2. Other conditions being the same on both lots of frames. The stock was 1 3/16-inch 9-hank carded roving; spindle speed 9500. Filling bobbin 8⅛ inches long with cone at the bottom. The diameter of the bobbin above the cone was 9/16th inch; diameter of the rings, 1¼ inch; gauge 2¾ inches and no separators; turns per inch, 28.62; travelers, 16/0 round points, A-1 circle.

We got better spinning on the frames with No. 2 flange rings. We were obliged to put new travelers on the frames with No. 1 flange rings at least every two weeks.

H. W. J. (MASS.)

Kinky Filling in Shade Cloth.

EDITOR COTTON:

Referring to the inquiry from "J. N. (S. C.)," who says, "I am having considerable trouble with kinky filling in the cloth. I am making 41s filling. * * * I am putting in 25.65 turns of twist per inch. * * * I have taken out all the twist I can and have the spinning run good. * * * The cloth room checks each piece by loom number, and we find that all looms are not kinking filling, even under the worst conditions."

It would seem that the statement, "All looms are not kinking filling, even under worst conditions," definitely puts the trouble on the loom. 25.65 turns of twist per inch for 41s filling is not excessive. This number of turns for 41s gives a twist factor of 4.00. This factor need not cause the trouble, and it is probably due to conditions at the loom.

Though "J. N." fails to say whether or not he is conditioning his filling, the following suggestions are offered in the hope that the trouble can be cured by some of them:

Use a conditioning machine to thoroughly steam the filling before it goes to the loom. If a conditioning machine is not avaliable, sprinkle the filling with an ordinary hand sprinkler. A piece of wet cloth, spread over the filling wagon, when not in use, helps hold the moisture in the filling.

Drill sloping holes—at an angle of about 45 degrees—in opposite sides of the shuttle, and place in each hole a tuft of bristles, from a cleaning brush, so that the sides of the tuft will be against the filling bobbin at a distance of about one-half inch from the end of the bobbin. One tuft to be touching the lower, and the other the upper, side

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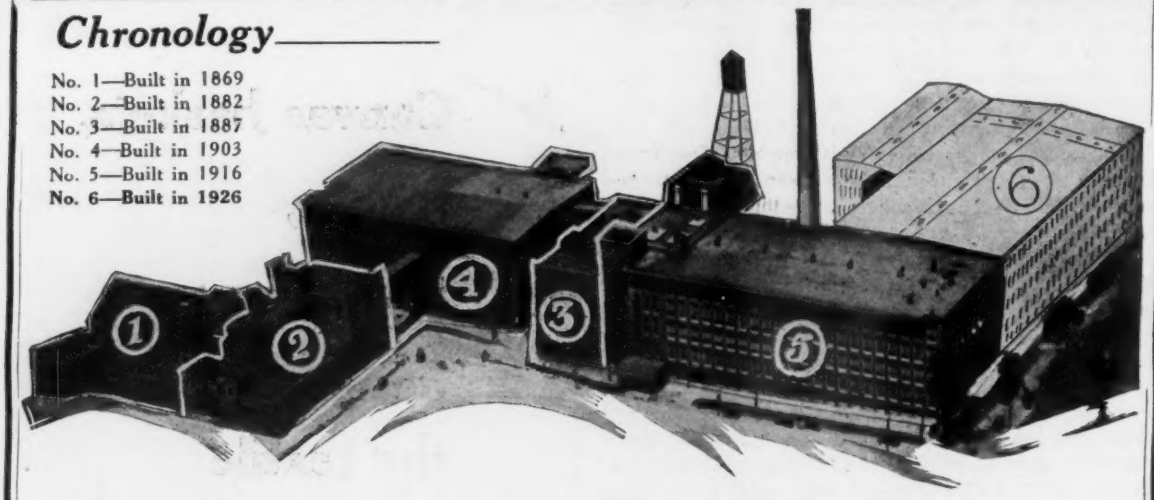

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of the bobbin. The bristles will act as a brake to the yarn coming off the bobbin and help prevent an uneven feed-off.

Too much power will cause the shuttle to bounce, and thus result in kinking filling. Improper harness setting may cause a shed to be delayed in closing on the filling in time to prevent kinks. Loose picker, rough box lining, worn cams or pick balls, or other worn parts that allow too much play will cause the trouble.

It is hoped that the foregoing suggestions will aid "J. N." in finding and curing his trouble.

J. W. C. (TENN.)

EDITOR COTTON:

In answer to the question regarding kinky filling in 44x40 shade cloth, asked by "J. N. (S. C.)" in the August issue. I think he is right in starting to look for his trouble in the spinning room, but I don't think he goes far enough back. He does not say what kind of cotton he is using, and, as everyone knows, the kind of cotton and length of staple used have a bearing on the character of yarn produced for this class of goods. Assuming that he is using one-inch Middling Carolina cotton, I will say that according to Draper standard, he has a little too much twist in his 41s filling. This should have 24.01 turns of twist per inch and he says he uses 25.65 turns per inch.

I have found that the setting of the loom has a great deal to do with kinky filling appearing in the cloth. The loom reed should be square with the shuttle race; next, I would line the back box with the reed and the lay end with the shuttle race. Next, the pickers should be paralleled, using good picker sticks and parallel blocks. This insures a straight throw of the shuttle. Then I would see that the picker on the battery end is well trimmed and the screw inserted in the back instead of the side of the picker. The check straps should be set to check the incoming shuttle properly.

The loom should pick from the top center and all surplus power taken off the picker stick. The lug strap should be run as high as possible on the picker stick so it will slope slightly downward to the pick arm. This insures an even parallel sweep of the picker stick and also gives a much longer stroke with less consumption of power. Binders and protection motion should be carefully gone over and properly adjusted. The filling fork or forks, as the case may be, should be set so as not to protrude too far through the fork grate. This can be done by properly timing the filling motion cam and taking all lost motion out of the filling motion dog.

The setting of the harness will be determined largely by the size of the harness cam. But in any case he should have a good open shed so that all warp threads are in the proper place before the filling passes through. The timing of the harness is very important. This also depends on the size of the harness cam as to the distance the reed can be set from the fell of the cloth with the harness level.

Setting the reed back from the fell 3½ inches on small cams and 4½ or 5 inches on the large cams has given us very good results, as it allows the filling time to be straightened out by the shuttle before the shed is closed. Setting the take-up roll and whip roll are very important factors in keeping an even pull on both sheds.

I have also found that the weather is a factor to be reckoned with. On dry days too much draft on the looms will cause the filling to kink. When the humidity is not evenly distributed over the room, this causes the filling to kink. I have obtained very good results by conditioning the filling with water where we did not use an enameled quill. With very little expense a sprinkler pot can be obtained to spray a generous amount of water on the filling in the truck box. When a short period of time has been allowed to elapse for the surplus water to drain off, the filling man should lay this filling up in the filling boxes for immediate use.

H. Y. (S. C.)

EDITOR COTTON:

I notice the question of "J. N. (S. C.)," who says his 41s filling is kinking in his 44x40 shade cloth. He said he runs 25.65 turns per inch in his 41s filling, having taken out two turns. He said the filling kinks in some of the looms and not in others.

He really has about two turns more twist than I would use in the 41s, although it may be that he has some low grade cotton. The trouble could be in the drawing, or he might have too high a beater speed. Both of these would have a tendency to weaken the yarn to where he would have to use more twist than necessary.

Sometimes too much power will cause the looms to kink the filling, and if the cams are set too late this trouble will result. I would suggest that he investigate these points, looking first over the looms. I would take the looms that kink and set the harness a little earlier, and take off all surplus power, using a fair tension in the shuttle eye, if he has that kind of shuttle.

I would like to learn if these suggestions prove of any value.

P. M. (GA.)

EDITOR COTTON:

I note the question of "J. N. (S. C.)" in the August number of COTTON stating that he has difficulty with kinky filling in his shade cloth, this appearing on some of the looms.

We were considerably bothered with this same trouble until we installed a conditioning room. Now all of our filling is conditioned and this trouble has been entirely eliminated. We find that with the conditioning room we can run standard twist, which of course means better running spinning.

There is nothing under the sun that I know of, except a conditioning room, that will eliminate the tendency of filling on this class of work to kink.

The reason why all of his looms are not showing up the kinky filling is possibly due to the fact that the looms not giving this trouble are directly under the heavy humidity, and the filling yarn while in the boxes or batteries is becoming pretty well conditioned anyway. This, no doubt, accounts for certain of the looms making cloth with no kinky filling in it.

B. L. (S. C.)

EDITOR COTTON:

I observe from the inquiry of "J. N. (S. C.)," as published in the August issue of COTTON, that he is having considerable trouble with kinky filling on his 44x40 shade cloth. This contributor does not say whether or not he takes any steps to set the twist on the bobbins before weaving. We have found that in some cases where kinky filling was giving trouble, we could eliminate this kinky filling by sprinkling water on the bobbins in the filling boxes and letting the filling stand over night. This seemed to help

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conditions considerably on classes of work where the twist was not sufficient to warrant steaming, and I believe if "J. N." will sprinkle his filling lightly as described he will probably improve his conditions.

It is probable also that some of this kinky filling could be overcome by adjustments on the loom, but from his inquiry I presume that he has gone into this matter very fully and has been unable to correct the trouble. If sprinkling the filling does not overcome the kinkiness, I would suggest as the only alternative that he steam his filling as long as necessary to kill the twist. This, of course, would necessitate the use of enameled bobbins or some other bobbins which will resist steam. C. M. T. (GA.)

EDITOR COTTON:

With reference to the question of "J. N. (S. C.)" regarding kinky filling in shade cloth, I cannot see from the outline of his conditions why he should be troubled with this. The only thing I could suggest is that he look into his conditioning problem to make sure that his filling is being well conditioned before going into the loom.

M. J. (MASS.)

Picker Room Humidification.

EDITOR COTTON:

In the June issue of COTTON "Contributor No. 662" wants information as to the effect of humidification in the picker room.

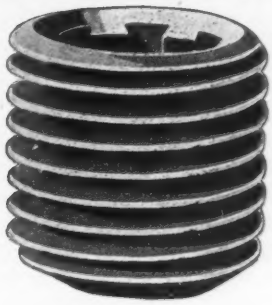
Let us study what really takes place in the manufacturing parts of the picker room with humidifiers in operation. We must admit that in considering the amount of stock continually in the automatic feed box, and also its change of position by the rotating lattice apron, together with the stock continually falling upon same, that the fibers are not exposed long enough to absorb much and the humidity is varied at this stage of manufacture.

The moisture will not enter the machine during operation, so in the production of a breaker lap, even with humidifiers in operation, we have very little hygroscopic moisture in the sheet of lap.

When the breaker lap is placed on the feeding apron of either the intermediate or breaker pickers, here is where you get the benefit of humidification. Take into consideration the working area of the feed apron and also the amount of time it takes to run a breaker lap, and we come to the conclusion that by exposing the cotton fiber with a relatively high content of hygroscopic moisture the fiber is less brittle and more pliable than when relatively dry, which means that few fibers are broken by the beaters in the intermediate or finisher picker. The presence of moisture softens the waxy coating of the fiber, which makes it more pliable.

When a sheet of a finished lap made up with such fibers is presented to the card, owing to the pliability of the fibers, the fringe will respond more quickly to the action of the licker-in teeth, and you have a fringe hanging over the nose of the feed plate, thus enabling the licker-in teeth to play through it and give it a proper cleaning, which means the saving of the fibers and a cleaner web at the front of the card.

The writer has made many tests in the following way. I stopped the humidifiers in the picker room for a week, and compared the breaking strength of the yarn with the



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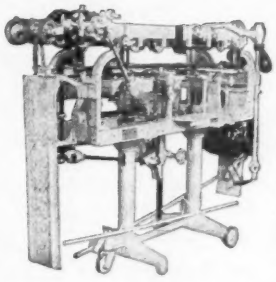

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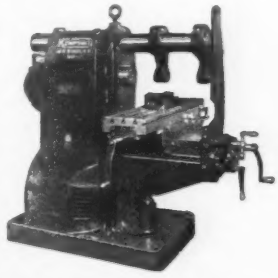
Where the "quick adjustment" feature is desired, Bristos are doubly valuable because they always respond to the wrench quickly,—no matter how tight the set.

The socket is so designed that the wrench grips the screw perfectly, and will not damage the socket even when great pressure is applied. It is this patented socket that puts long life and extra service in Bristos.

Bristos cost less than you would expect to pay for such performance; in fact, no more than for many others which cannot equal Bristos.

The advantages of the dovetailed flute socket—used only in Bristos—are explained in our Bulletin 820-J; also complete information about the line. Write The Bristol Co., Waterbury, Conn., makers of Bristo socket head cap screws.



BRISTO Socket Head CAP SCREWS

yarn made from the stock with the humidifiers in operation, and in each case found very little difference. However, the big advantage is found on the cards. When I stopped the humidifiers for a week in the winter months there was such an increase of static electricity that two and three boxes of waste per day resulted, and many times the conditions were so bad on the cards that I was forced to put off the test to a more favorable time. So for years I have not bothered making any tests, for I am convinced that humidification in the picker room will not increase the breaking strength of the yarn to any great extent, but will help to destroy static electricity to a large degree and also reduce the amount of waste on the cards.

WASH (R.I.)

Some Developments in Doubling.

EDITOR COTTON:

For cloths that are used today for dress goods, effects can be produced without the use of a dobby or jacquard on the loom, and that can be done by the doubling department.

I am afraid the spinner is limited in his methods to supply anything like novelty yarns. Yarns of all qualities he can supply, but beyond variations of twist, ranging from soft to hard, as in the case of crepe yarns, unless he has a doubling room he is limited.

The spun yarn, taken to the doubler, can by folding, cabling and inserting twist, either in the same or opposite direction to that in the single yarn, and in varying amounts from XXXX Soft (i.e., $\sqrt{c\ 1.3}$) to XX Hard (i.e., $\sqrt{c\ 6}$), by passing the yarn through water, or by twisting dry, by cleaning and gassing if required, can and does place in the hands of the weaver (manufacturer) yarns of infinite variety and suitable for almost every class of goods.

It is not necessary to go into all the uses of doubled or cabled yarns, but a summary will suffice: 1st, cabled yarns for tire fabric; 2nd, folded yarns for motor duck; 3rd, heavy folded yarns for cotton duck, sail cloth, canvas, Balata duck, conveyor and elevator belts; 4th, cabled yarns for fish nets, healds, etc., 5th, fine and medium yarns for manufacturing; 6th hosiery yarns; 7th sewing and crochet yarns; 8th, lace yarns.

The list is an extensive one, including yarn of all counts and qualities from waste yarns to the finest counts of combed Egyptian and Sea Island yarns. The number of folds or ends may vary from two in an ordinary two-fold to as many as 40 in the case of material made for brakes,etc.

The machinery will have to be suitably arranged for the particular branch of the trade to be catered for. It is owing to the number of uses to which doubled yarn is put that the industry is becoming specialized.

In case of fine yarns for the lace trade, the machinery necessary to work up from spun yarns and set in order, are: (1) cop winding, quick and slow traverse; (2) ring and flyer twister; (3) clearer frame; (4) gassing; (5) reeling; (6) preparing; (7) bundling. The yarn being delivered in five pound or ten pound bundles to the manufacturer.

The yarns manufactured into machine lace and curtains may be classified as follows: (1) filling or bobbin thread; (2) the ground warp; (3) the outline thread; (4) the gimp thread.

Numbers 1 and 2 are usually two-fold yarns, cleaned and gassed, and the former invariably prepared.

The outline thread is often 2/30s or 2/40s American plain yarns, and often twiner doubled. In some cases 2/80 carded Egyptian is used. The gimp threads are the filling threads of the pattern, and two- and three-fold cotton yarns are often used.

The filling thread is the most important of all the threads used, for in manufacturing the heaviest strain is put upon it. It may vary in quality from 2/20s to 2/400s and in stock from super-carded Egyptian to super-combed Sea Island. 2/20s to 2/60s are generally produced on the ring twister, for such counts a medium ring or flyer is used. In finer counts 2/200s and upwards the flyer is always used.

Double spun yarns are very much used in place of the two-fold yarns; as an example, 1/60s will be used instead of 2/120s.

The single yarn is wound (one end up) and then passed through the wet doubling frame and extra twist inserted. The result of the soaking and the extra twist is to produce a yarn superior in quality and strength to an ordinary single, and of course, cheaper than the 2/120s. After twisting, the yarn passes through the process of cleaning, gassing, reeling, etc., just as the two-fold yarn does.

Large quantities of two-fold yarns of 100s counts or about, are being used in the manufacture of cotton voiles, crepe, etc., and by modification of the methods in producing lace yarns, a type of yarn is made which by being printed, or used in conjunction with a few threads of fancy yarn, mercerized yarns, or artificial silk, very pretty effects can be produced in the loom.

Voile yarn is made by twisting the two-fold yarn in the same direction as the single yarn. Generally the counts are 2/60s to 2/100s and the turns per inch 38 to 40 or $\sqrt{c.\ 5}$, approximately. The addition of the twist to that in the single yarn makes the yarn very wiry and elastic, and after gassing, very bare of fibers. After gassing it is generally beamed or bobbin wound according to the use it will be put to as warp or filling.

The method of producing crepe yarn is smiliar to that used in making voile yarns. In some cases the counts will go up to 2/140s and the turns per inch to 70.

In the manufacture of other kinds of cloth from two-fold yarns apart from being gassed and twiner or frame doubled there are no special effects and so does not need to be elaborated.

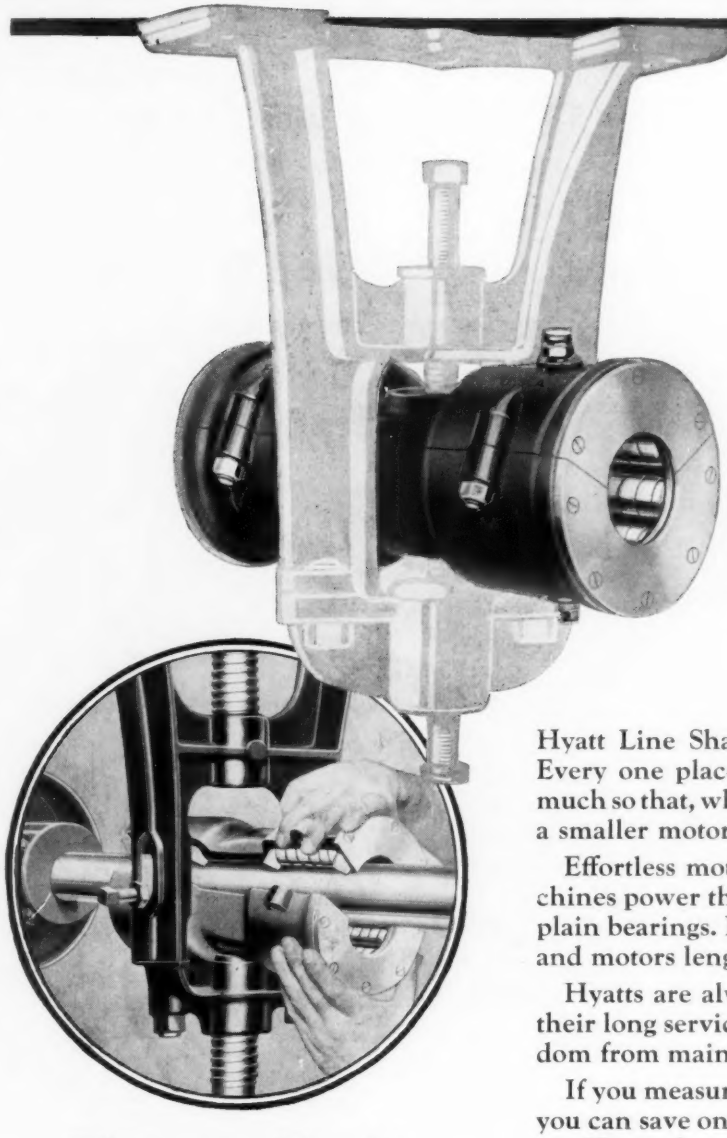
The doubling department must be equipped to deliver yarn in beam, cross-ball, cheese or bobbins.

Cabled or hosiery yarns, are doubled at two operations, the method or process being as follows: For a six cord sewing cotton, wind the yarn two ends up at a quick or slow traverse winder. Twist at a ring doubler which makes a two-fold yarn. Re-wind the two-fold three ends up and twist at the ring doubler into six-cord.

The twist at the first doubling will be inserted in the same direction as the single yarn, and the final doubling in the opposite direction. The yarn afterwards being prepared for bleaching or dyeing according to the method used.

Heald and net yarns are made in the same manner as the foregoing, only the number of ends are greater and in twisting the flyer will be used either in one or both yarns.

Fancy or novelty yarns are produced by twisting together two or more yarns of a different color, counts or material at varying rates of delivery and tension, and in-



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Effortless motion of Hyatt rollers gives the machines power that normally is absorbed in chafing plain bearings. Drag thus released from belts, gears and motors lengthens the life of these units.

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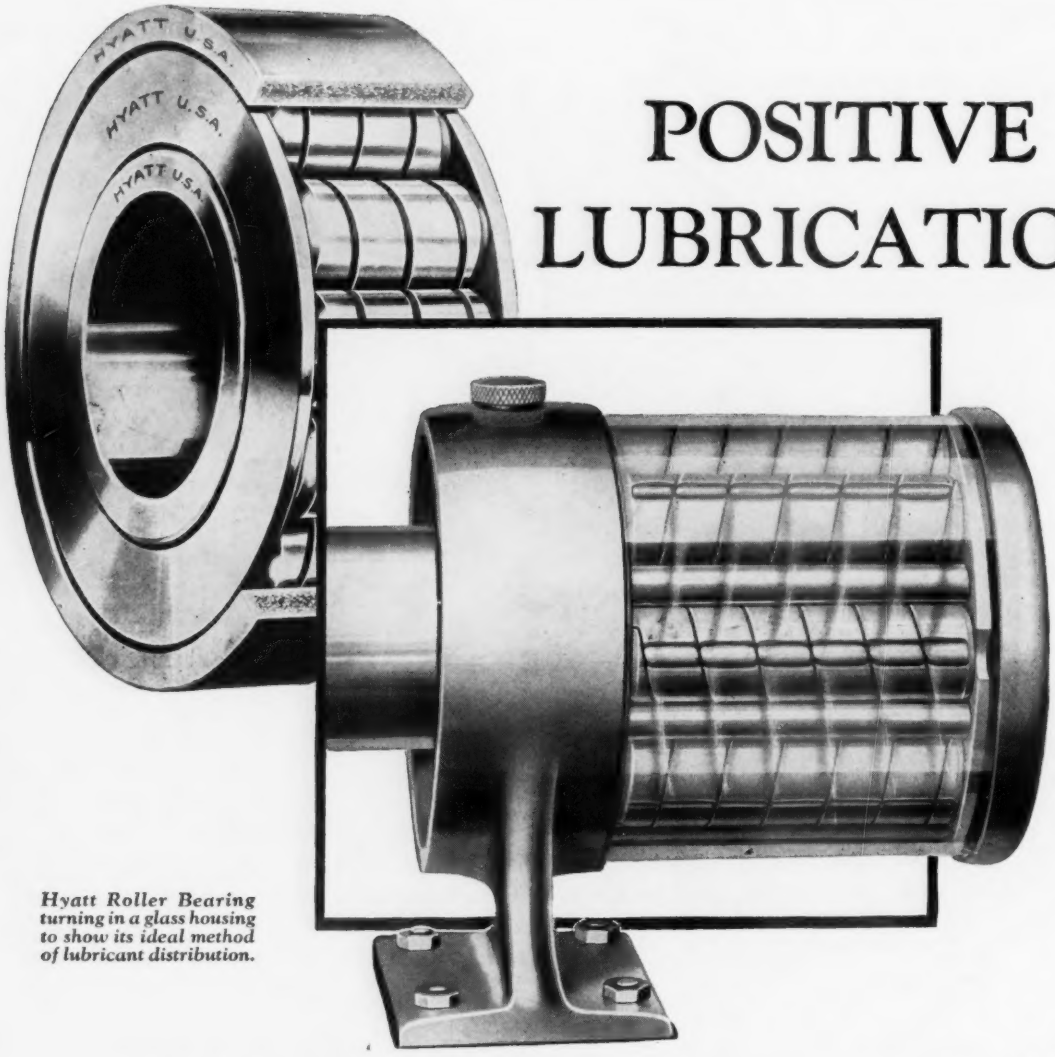

Hyatt Roller Bearing turning in a glass housing to show its ideal method of lubricant distribution.

THE helical construction of the right and left hand, alternately assembled, Hyatt rollers keeps the oil in constant motion. This insures cool running bearings and extends their life immeasurably.

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PRODUCT OF GENERAL MOTORS

cludes such yarns as grandrelles, knop, loop, snarls, spiral, cloud, flake, etc., yarns.

Grandrelle is formed by twisting two or more threads of similar counts but different colors evenly twisted and are produced on a doubling frame of ordinary type with one line of top and bottom rollers and a creel arranged for two bobbins per spindle.

Corkscrew yarns may be developed by twisting a coarse two-fold with a fine single, the former being given off at a quicker rate than the latter.

Spiral yarns are produced by feeding a thick soft single end with a harder single thread of a finer count. By varying the counts of the yarns, variety can be obtained, this being increased by the use of a frame carrying two twill of top and bottom rollers with special gearing at the off end of the machine for varying the speed of the back line of rollers, the front line delivering the greater amount to form the spiral.

Gimp or truffle yarns. This type of yarn was largely used about three years ago and is really a spiral yarn, which after being formed is again twisted in the opposite direction with a fine thread. The variation in counts and appearance is obtained by the use of different singles and of course a different ratio of speed between the back and front roller at the first doubling. The range of counts is generally from 3½s to 5s. In case of self-colored cloths, the yarn is woven in the gray and then piece-dyed. Where fancy effects are required it is dyed in hank form, rewound on cheese and then doubled.

Knop yarn is produced on a frame with two lines of rollers, the front line delivery the ground thread and the back line the knopping thread. The latter after leaving the roller, passes beneath a vibrating bar operated by a cam and lever arrangement. The bar in falling follows the ground thread and coils it in the form of a spot or knop, the surplus yarn being taken up during the upward movements of the bar.

The distance between the knops is varied by the number of vibrations of the bar and the speed of the rollers of the front line, and the form of the knop is changed by the amount of movement given to the vibrating bar, this being varied by the cam and the respective length of the two arms of the lever.

Loop yarn. To produce this kind of yarn two fine threads are used to form the ground. These pass between the back line of rollers over a rod in front of the cap bars, and then between the front top and bottom rollers, which are grooved to prevent contact. At this point they join the loop thread which passes through the front line only. The loop thread, which is usually mohair, is delivered at a greater speed than the ground thread, and the slackness which would otherwise ensue is formed into a loop. When twist is inserted if a hard twisted cotton yarn is used instead of mohair, the slack yarn will produce a snarl instead of a loop. The loops, when formed, are rendered permanent by retwisting with a fine yarn in the opposite direction.

Flake or slub yarns. In doubling this kind of yarn two lines of rollers are used. The two ground threads pass between the front line only. The slub or flake is formed by passing a sliver or soft roving between both lines of rollers. The back line of rollers receive an intermittent motion, imparted by a ratchet arrangement operated by a cam and lever, the result being that a tuft of soft cotton is attached at given intervals and twisted into the yarn. The distance between the slubs is regulated by the various change cams.

In doubling the number of ends being doubled together does not exceed six, there is no special difficulty in dealing with the same by the usual method of stop motion winding and twisting, but when doubled yarn is required of more ends, even 12 or over, folded together, the ordinary assembling for the creel becomes difficult and various methods are adopted to get over that difficulty.

For folded tire yarns which are very often 12 ends of 23s, the finished cloth for strength and firmness requires it to be absolutely free of bunch knots. If the yarn is wound six ends on an ordinary traverse winder, two bobbins per spindle are required in the creel of the twister; and the tying of a knot when one or the other of the bobbins fail. This may be overcome by using a special type of doubler winder of large gauge and fitted to wind 12 ends up. The single yarn is first wound 12 ends up onto a taper bobbin at the vertical spindle winder. The taper bobbins are then placed in the creel at the quick traverse winder and wound 12 ends up onto a large cheese containing six to seven pounds of yarn, practically free from bunch knots, which is placed in the creel of the doubler.

Another system is to wind the single yarn onto warpers bobbins and then make an ordinary beam containing about 300 ends for example, which is placed in a special creel at the doubler. The doubler may be a ring doubler or flyer doubler of the ordinary type, but in many cases a doubler made from roving frame patterns is adopted, the spindles being positively driven and the bobbins being pulled round by the tension in the yarn exactly as in the case of the ordinary type flyer doubler.

When the ring or flyer doubler is used for this type of work, the spindles are driven by an improved arrangement of tape drive, one tape to two spindles with a special tension arrangement.

Cabled yarns. Great quantities of cabled tire yarns are now being used and the system of making is similar to the method used in making sewing cottons, etc. The yarn used is 23s counts, 15 cord, cabled in three 5s, i.e., yarn is doubled 5 ends up with twist inserted the same way as in the single yarn and then retwisted three ends up with twist in the reverse direction to that in the single. The result is a 15/23 cord yarn of great strength, compact, smooth, and round in appearance. It is made up into a loosely woven fabric with a pick of filling about each 1/4-inch, and the resisting property of the fabric will naturally depend upon the strength of the cabled yarn forming the warp.

The method of production is exactly similar to that in the case of sewing cotton up to the insertion of the final twist as follows: (1) Wind 5 ends up; (2) twist at the ring doubler; (3) re-wind 3 ends up; (4) twist at ring or flyer doubler.

Cotton of good Egyptian quality is the best for tire fabric, but good American staple of 1¼-inch is suitable and largely used on this continent.

C. W. (CANADA)

New Advertising Concern.

J. C. Bull, formerly vice-president and director of the Frank Presbrey Company, has formed J. C. Bull Incorporated, 101 Park Avenue, New York City, a new advertising agency.

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Force tramps and sneak-thieves to steer clear of your plant. Erect a high, unclimbable Anchor Chain Link Fence. Everlasting protection is insured by the copper-bearing steel fabric (galvanized after weaving), drive-anchorage and Anchor Posts, the strongest fence posts made.
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Pictured above is the modern factory where Perkins Practical Brushes are manufactured. It was planned by the architect and engineers for the most efficient production of industrial brushes. Every mechanical device and labor and cost-saving machine essential for the making of the best quality brushes is included in its equipment. The building is of stucco and concrete construction. It was erected in 1926. This new factory is manned entirely by native-born, white American skilled labor, trained and developed by the company during the last fifteen years.

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Don't Abuse the Cotton.

EDITOR COTTON:

In the manufacture of cotton I think a lot of us forget the natural characteristics of the plant, which make possible the manufacture of a perfect product, whether yarn, hosiery, cloth or what-not. Most of us know these things, and yet, like many of nature's laws, they are abused.

Let us recall, in the beginning, that the cotton fiber is a tubular, vegetable structure, somewhat spiral in shape, and contains about eight per cent moisture and natural oils. This particular property renders it suitable for manufacture.

Cotton manufacturers have been, and are now passing through a period of close competition in selling, which has resulted from hand-to-mouth buying. During this time many mills have installed special cleaning devices and are, in many cases, using leafy, dirty cotton of lower grades in order to meet this keen competition. With proper cleaning, the appearance of the yarn should be the same or better.

However, we cannot well increase the number of manufacturing operations without more injury to the good stock. Many have found the secret of this to be in cutting beater speeds and getting better settings. (I am not striking at *close* settings. I believe they are an advancement toward better results.)

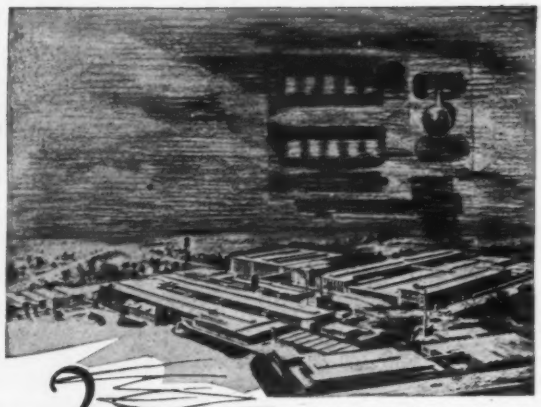
Following this along, I think spinners and carders cannot be too careful in roll setting. Too much good stock is injured and broken between rolls because of using wrong settings. If we could just keep a picture of the delicate structure of the fiber in mind, and remember that all injuries ultimately make a weaker product, we would have better results.

You doubtless are wondering what the writer thinks of spraying oil on cotton. This is simply an effort to put back into the fiber what has been removed in dyeing or drying processes. These losses could only be properly replaced by the Creator. Of course this can never be done quite as well as He has done it. It does help, however, just to the extent that we approach the original condition, no more.

Humidification was a step in this direction, and is serving well its purpose in the same respect.

You say, "What is he driving at?" It's this. Do not destroy the properties that can be spared. Damaging the fibers can be largely avoided. Slasher men should not dry all of the life out of the yarn. Slashers were built for other purposes. Yet some slasher tenders seem actually to think that they must bake the moisture entirely out of the yarn. Some one wrote some good discussions which were recently published in COTTON about this subject, stressing the "cold feel" on warps. Thanks for these thoughts. The editors of COTTON must cringe to think of ways the useful little tuft of cotton is often ruined. Slasher room overseers should try to encourage the slasher tenders to dry their warps just enough to be sure they don't stick on the beam—to keep trying for that "cold feel", and keep in mind that a little free tallow helps to bring back that natural hygroscopic condition of the fiber.

Wonder if fixers couldn't keep these little things in mind somewhere, when they hang the harness in? A good shed goes along with this little idea. Many a stoppage is



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caused by under strain on the warp. If we could take care of our equipment, run good smooth shuttles, use good harness eyes and drop-eyes, we would get bigger production every time. Let's all get down to a sane thinking basis on this subject more often, and give our cotton a better show. Change travelers when needed, keep our settings right, and give back to the yarn as nearly as possible what we are forced to take away.

T. R. (N. C.)

Why "Wash" Thinks Bobbin-Lead Defective.

EDITOR COTTON:

Perhaps there are readers of this department who might ask the question, on account of so much discussion, "Why is the bobbin-lead system on all fly frames defective?" In answer to this, I will say, at times, when the bottom cone is raised, if the same is not held stationary by some means, it will revolve in the opposite direction and make considerable trouble by breaking and tangling the ends. This statement, of course, bears out the fact that a great amount of resistance is exerted on the cone belt.

The work of winding the roving on the bobbin depends largely upon the cone belt, and the strain on the cone belt is usally the factor which causes unequal conditions on fly frames.

If a bobbin increases in diameter from 1 inch to 1 1/8 inch the proportionate increase is 1/9 part of the total, but if a bobbin increases from 3 7/8 inches to 4 inches, the proportionate increase is only 1/32 part of the total diameter. It must be clearly seen that the equal increase of 1/8 inch in the diameter of the bobbin is only equal in addition, and very unequal in proportion.

It is this inequality in proportion, resulting from equal increments of bobbin diameter, that has to be produced in the outlines of the cone in order to obtain winding on, and the result is the concavity and convexity of the cones. This goes to show the influence the pressure of the paddle has in the true formation of cones.

Again, when any fly frame is running slowly, the pressure is slight, and the tension, then, instead of being between the paddle and the surface of the bobbin, where it should be, comes between the surface of the bobbin and the bite of the front rolls. To prove this, notice when a fly frame is running with a tight tension, it will not give much trouble only when the frame is stopped and started again, which shows what I am pointing out here is true.

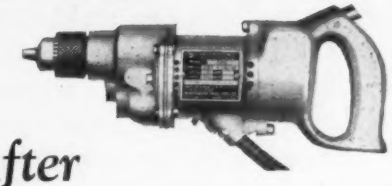
Where, then, is the practical man who can deny that we have two tensions on all the present types of fly frames?

When a frame is up to speed and the maximum pressure reached, the tension then comes between the paddle and the surface of the bobbin, and in a minute or two the frame begins to run with a tight enough tension to cause an end or two to snap; when the frame is stopped and started again a few more are sure to come down, and we find the tender looking for the fixer to change the rack gear. But what about the change in tension?

When the frame is up to speed and gives a perfect tenson, does stopping and starting the frame strain the work?

Can the writer be blamed for conceiving this idea? If the conditions described will take up the slack on the end in question in so short a time, do they not strain other ends? They certainly do.

Thor ELECTRIC DRILLS



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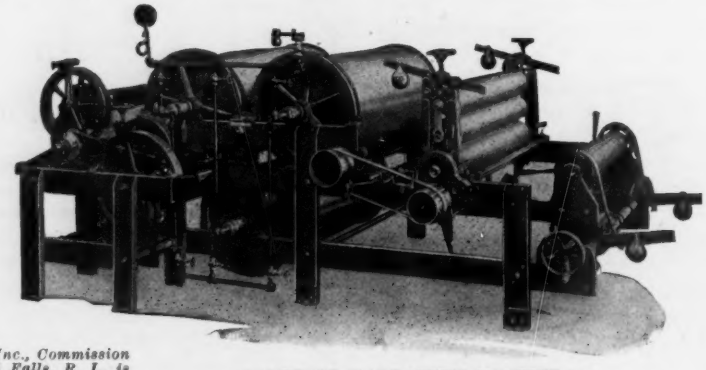
FACTORS

THE JOHNSON WARP-SIZING MACHINE



PATENTED WARP-SIZING MACHINE 81

The R. I. Warping Co., Inc., Commission Warp-sizers, of Central Falls, R. I., is one of our more recent customers. Mr. E. G. Hayward, Pres. of the Company, says:

"YES, WE HAD GOOD RESULTS IN SKEIN-SIZING—BUT IT CANNOT BE COMPARED TO THE WORK WE TURN OUT ON OUR JOHNSON WARP-SIZING MACHINE.

"WE NOW MAKE WARPS THAT WEAVE WITHOUT A HITCH."

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Southern Representative
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Charlotte, North Carolina, U .S. A.

However, for the first time I wish to state that the flyer-lead system is a thing of the past, and why? Because we now have a new compound that drives the spindle and bobbin during winding on. A thing that was thought impossible not so long ago. Remember, some time ago I stated that the time was not far off when a coneless speeder would be placed on the market. Owing to the bottom cone being no longer a driver, and removing all strain on the cone belt, makes a coneless speeder possible.

In the near future I will give the readers a complete sketch, and explanation of a coneless speeder.

WASH (R. I.).

Warp Streaks.

EDITOR COTTON:

In the June issue of COTTON I notice that "Contributor No. 663" would like to open a discussion on warp streaks. I should be glad to enter this by saying that warp streaks show more plainly in piece dyed goods than in gray. Very often I have found these to be caused by one or more ends of wrong counts being mixed with the rest of the warp.

Ends of uneven counts or reverse twist will cause similar streaks. Sometimes these ends will run through a few cuts; sometimes one or two warps, and then again they will run through a full set of warps. If they run through cuts woven on different looms it is almost sure that one of these troubles is the cause. At times many yards of cloth have to be cut up and many hours of patient work have to be put in on testing machines to prove that the spinner or spooler is at fault. We all know a double end will cause a streak lengthwise of the cloth. These should never get by the weaver or inspector.

Spare ends run around the warp or warp and whip roll and allowed to accumulate and spread the rest of the warp will cause a bad streak. Spare ends should never be allowed to run around the warp, as the ends pulling from under the accumulation are under more tension than the rest of the warp ends.

Spare ends that are run around the warp and whip roll should be cut down once a week. Some mills have this done by the smash piecer. Ends sized together, thus causing slight holdbacks at the drop wires, are responsible for many of these warp streaks. Bringing this to the attention of the slasher tender is the best cure.

If steel heddles are used, binding or crowded heddles will give this trouble. At all times the heddles should move freely on the heddle bars. If the bars should have the least rust on them the heddles will bind and chafe the yarn. The bars should be rubbed with waste dampened with oil. The heddles should not be crowded against the heddle bar hooks. The yarn should pull straight from the harness to the fell of the cloth.

The latest double bar harness frame is a great help for this trouble. Heddles that are bent and twisted should be taken off and replaced with properly repaired heddles. Tying up broken heddles with twine or yarn should not be tolerated, or binding and streaks will result.

Cotton harness, improperly repaired, will cause chafing and warp streaks.

I have seen drop wires that were crowded or binding cause this imperfection. They should move freely at all times. Just a rub with an oily finger will make a lot of difference. If the wires are crowded, more banks should

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SPINNING FRAMES

Number Yarn	40
Twist Square	4.40
Turns per inch	27.8
Staple	1 1/16"
Kind	Carded
Hank Roving used	4.50D
Draft	18
R.P.M. Spindle	9300
R.P.M. Front Roll	107
Weight Top Roll	1100
Average Size	40.31
Average Break	46 lbs.

The above is a record of a test recently made using roving taken at random from a large Massachusetts mill.

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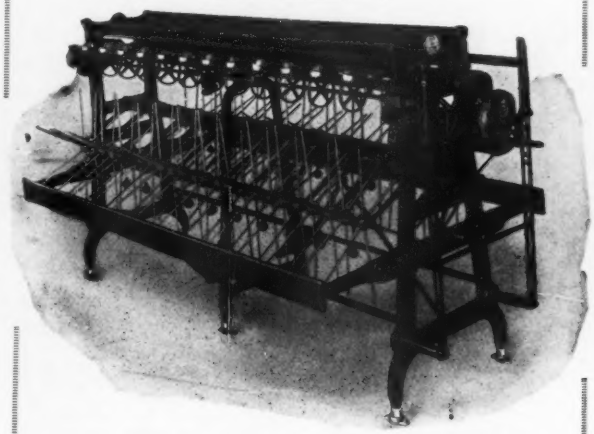

Type BO. Skein Winder for Rayon, Silk and Mercerized Yarn.

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be used. No mill should buy a warp stop motion unless it will take four banks of wires.

It is well known that a damaged reed will cause a bad streak. A reed that has been repaired will sometimes give this trouble. Perhaps proper jointing was not done, or if only a few dents were put in the wrong size wire may have been used.

Temples damaging the reed or temples working too much, and bad temple burrs, will cause a streak warp-way in the cloth. A weaver snapping the temple back after a pickout will cause the temple to loosen up and move nearer the reed, and when the loom is started it will move too much and almost pull the cloth apart. The weavers should be instructed to grasp the front of the temple and let it back gently. The burrs might be binding for want of cleaning, or a little grease on the spindle or screws; these should be cared for every time a new warp is put in.

I have seen loose fillet on the takeup roll cause bad marks of this kind. Loose fillet should be fastened down just as soon as detected and some method of periodical inspection should be used to find this fault.

If the yarn is dyed, uneven dyeing will cause bad streaks. These should be brought to the attention of the dyer.

If warp streaks are all across the cloth the setting of the brake beam and whip roll can cause it. The harnesses crossing too far from the fell of the cloth also can be the cause of this trouble. Different goods require a different setting.

I think if this contributor is having trouble he should find the answer in one of the foregoing suggestions.

N. R. (MASS.)

EDITOR COTTON:

The question of "Contributor No. 663" published in the June issue of COTTON is a very interesting one and has given me a world of trouble and to tell the truth, I have not overcome it yet. This question is "What Makes Warp Streaks in Plain Fabrics." I have always worked on it from the simple side of the machine and thread standpoint, of the warp yarns, and in judging from this side it always looked to me that if I could get all of the warp threads to stand the same, or have the same tension and be drawn the same so that there would not be any slackness in these warp threads, and have the warp to open wide enough to allow a clear passage of the shuttle, and the harness set up level, and with as little vibration as possible of the looms, that this always gave me a better evenness of this wavy condition or streaks, as they are sometimes called. Irregularly shaped cams and cam rollers have this tendency to show up streaky, especially if you are on steel heddle harness.

The take-up of the cloth has something to do with this wavy cloth on the looms. If the take-up is not taking up as fast as it should it has a tendency to retard, and the filling and the shuttle will drag against the warp threads and push them out of place and so show this streak. Too quick a let-off will have this same effect, which acts the same as if it were not taking up fast enough, and in my judgment this is only a mechanical difficulty but will take the most careful study of setting up to get it arranged so as to cut the defects down.

The condition of the looms must at all times be considered if they are old looms. There is more danger of worn bearings, gears, etc., to give one trouble. At a mill where I worked some years ago we had a lot of this trouble and decided that it was for the most part the worn gears. Gears were cut and new trains of gears put in. This, together with the overhauling of the looms got them in fairly good shape at least and this apparently was the difficulty. Some weavers say that the way the yarn is slashed will cause some of this trouble, but I never could honestly see it that way, because it is always a hard matter to get a weaver to commit himself.

T. A. D. (GA.)

Figuring Twist for Roving.

EDITOR COTTON:

I will give you in this letter a method a friend showed me recently for figuring the twist per inch for roving. This system will work out for any hank roving on slubbers, intermediates, speeders, or jack frames, for any staple of cotton and for any mixing of cottons. As you know, the machinery catalogs give an arbitrary method of multiplying the square root of the roving by 1.20 or some other constant. However, this is based on 1-inch cotton, without any mixing of waste in it, and does not consider the varying lengths of fiber, used by different mills and the different mixes made up now-a-days in the opening rooms.

On straight cotton, regardless of the conditions, the following formula will give the twist per inch:

$$\sqrt{\frac{1.8 \times \text{hank roving}}{\text{Length of staple}}} = \text{Twist per inch in roving.}$$

You will notice that a constant of 1.8 is used for straight cotton. For a mixture of 75 per cent cotton and 25 per cent waste, I have found it better to use 1.9 as the constant, and for a waste mixing, strips, etc., a constant of 2 at this point will be best.

I know that most mill men, after figuring out the twist, go to a certain extent by the "feel" of the roving, but even so, I think this little formula will be found useful in checking up on their figures and "feel." In other words, if you will use this formula to figure the twist, and then compare it with the theoretically figured twist which has been adjusted to conditions, they will be very close.

In any case. I submit this little trick for what it may be worth to your discussion department readers. I should be glad to have them try it and let us know whether it works out for them.

BOB (GA.)

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United States Rayon Corporation, 40-46 West 25th St., New York City, have appointed the Glenn Commission Co., of Greensboro, N. C., and Richmond, Va., as their southern representatives. The Glenn agency has handled rayon in the southern territory for a number of years and is well known; with the new connection, rayon yarns in skeins, either from stock or on import orders, also converted into any form, will be available.

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Built in sizes 3¼ inches up to 4 inches in diameter. Can be equipped with as many as six yarn changing fingers, which gives a range of five different colors under control of the pattern mechanism exclusive of heel and toe colors.

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Attachments for producing the fancy effects can easily be thrown out of action, and machines produce plain stockings, as with any H H, K or B machine.

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Training Full-Fashioned Knitters Rapidly

The Outline of a Successful Method for Overcoming an Almost Universal Problem Among the Full-Fashioned Mills.

BY C. H. BAXTER.

The training of full-fashioned knitters rapidly has been a problem which has confronted hosiery manufacturers for many years. While quite a number of manufacturers have succeeded in training knitters, a large number have found it expensive and in most cases they were not entirely successful. This was because, for various reasons, the training of knitters rapidly resulted in a tremendous loss of production, increase in waste, breaks and smashes to the knitting machines, and too great a percentage of so-called seconds.

Because of these failures many manufacturers feel that the training of knitters rapidly cannot be done without great expense, plus the damaging of machinery. The result is, that when all knitting machines are in operation throughout the country good knitters are scarce and many machines are idle, simply because there are no knitters available to operate them.

In writing this article it is my purpose to show hosiery manufacturers who are interested in training knitters rapidly, that it can be done without costing any great sum of money and at the same time teaching them in such a way that they are actually more skillful through proper training than most knitters who were taught in what might be said is the old way of training.

The old way of training knitters was to take a boy somewhere between the ages of 14 and 17 years, place him as a helper on a knitting machine with a skilled knitter, and usually keep him with this knitter for three or four years before giving the young man a chance of operating a machine of his own. The trouble with this system of instruction was that the average skilled knitter, while a good workman, was not a teacher, so that usually the helper or apprentice had to pick up any knowledge the best way he could. As a rule, the skilled knitter, being on a piece work basis, would not care to allow the apprentice to learn anything outside of what would be helpful to the knitter, so that the apprentice rarely had any opportunities to learn the important things neccessary to become a skillful worker.

For years I have made a study of conditions regarding the training of knitters, and some four years ago, because of labor trouble, was given the opportunity to put some of my ideas into practice, and since that time have trained some three hundred young men to become skilled knitters under a system of training which has proven successful.

In the training of full-fashioned hosiery knitters rapidly the most important thing is to secure young men not less than 20 years of age or more than 30 years of age. Such men should have a grammar school education and at least two years of high school. The more education a man has, the easier it is to train him, as he has a foundation which enables him to grasp more readily the various things that must be learned.

The next important thing in connection with this training is to have at least one skilled knitter as a teacher. Such a man should be one who thoroughly understands knitting in all its branches and also must be capable of teaching others to acquire the knowledge he has of the trade. A man of this character is usually either a superintendent or a foreman, and of course no manufacturer would operate a hosiery mill without having just such a man in charge.

In a new plant just starting it is well to have a few of the machines operated by skilled men, and with each man place one or more apprentices as helpers. When the desired number of young men are secured, start what is called "a knitting school". If the mill is already in operation, it is best to operate the school two or three evenings a week, spending two or three hours each evening for teaching This school should be operated the same as any textile school as far as discipline is concerned. State a certain hour that the school is to start and assemble all the apprentices at that hour for what would be called the "lecture period".

The lecture period is very important, as this enables the teacher to explain to the group certain important details, which I will outline, and also ask the group to ask questions in reference to certain things which the apprentices are anxious to learn. Answering the questions enables all to hear the answer given by the teacher, which is very instructive and brings good results.

After the lecture period, the group is divided into various classes. Each class does a certain operation and the apprentice does not learn anything else until he knows thoroughly how to do the operation that is taught in the class he is in.

The classes are divided as follows:

Class A is taught topping on stands used by toppers for footing machines.

Class B is taught topping on legging machines.

Class C is taught how to turn welts, including the start of making welts.

Class D is taught how to straighten needles before putting them into a knitting machine.

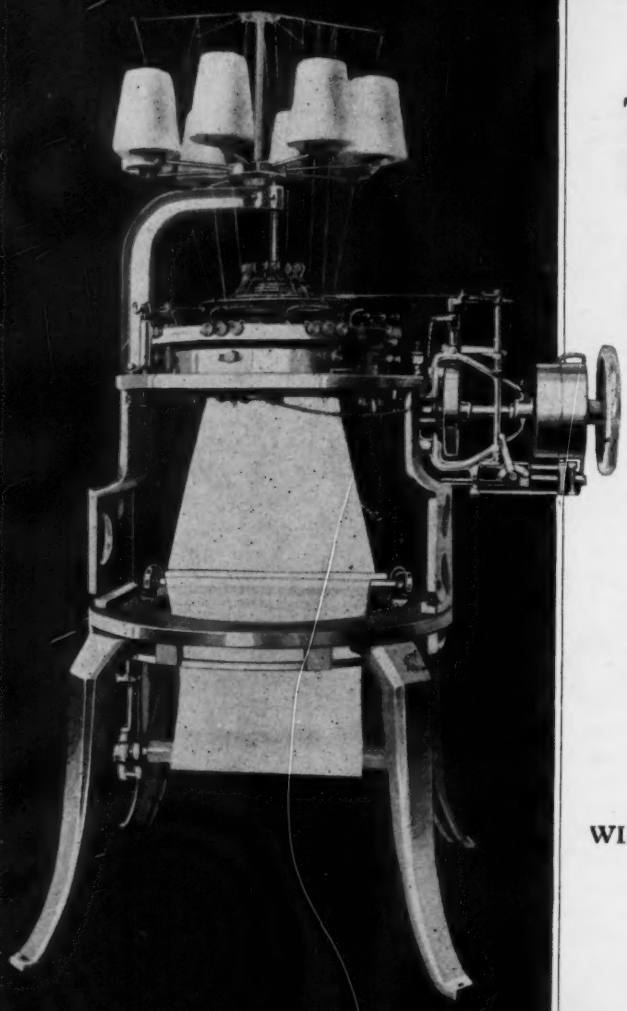
Class E is taught how to put needles in a machine and how to straighten them in the machine.

Class F is taught how to straighten and plier narrowing points; how to fix narrowing holes; and how to set narrowing fingers. This class is almost ready to operate a machine and everything pertaining to the operation of a knitting machine, in reference to quantity and quality is taught this class.

One night each month all the classes are taught *how* and *what* to oil on knitting machines, and also how to thoroughly clean a knitting machine.

This outlines the general course of training, so I will follow with what the lecture period subjects are and also how each class is trained.

The first lecture usually should be on the subject of what is expected of the knitter; that quality and quantity are necessary; that in every operation there is only one way of doing it, that being the right way. In this lecture also instruct the apprentice in the conservation of materials;



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in other words teach that all materials used must be handled in a way to make the least amount of waste possible.

The second lecture should be on the conditioning of yarns used, especially where silk hosiery is made. Educate them as to the importance of materials being in the proper condition before knitting; show samples of poorly conditioned material and point out the defects on account of the materials not being properly conditioned.

The third lecture should be on the threading up of all material, showing just how each end should be threaded from the cone to the carrier on the machine. Explain what the various tensions are for and why it is necessary to thread through these tensions.

The fourth lecture should be on lengths of hosiery and the use of the so-called slacker and what the slacker does and just where it has to be moved.

The fifth lecture should be on the quality of hosiery and what is a first quality stocking. In this lecture have as many different kinds of samples as possible showing various defects and explain each defect and what caused it.

While there are many more subjects that could be suggested, these are the more important ones, and as the school progresses, lecture subjects will be obtained through the questions asked; also, during the day, when machines are in operation there is always something that will occur which will make an interesting and educational topic about which to talk.

In reference to the training of the classes we will begin with *Class A*.

In this class the apprentice is taught topping, and the reason for using the topping stand is that it is much easier for the apprentice to learn on this stand as the points are not springy and it enables him to learn how to find the stitch as well as top on the one course only. For topping, use the leg of a stocking that has been spoiled in the heel, and have the apprentice top on the stocking below the splicing of the leg. This is done because the narrow width of the leg can be topped on all the way across the topping stand so that the apprentice will learn how to put on all stitches from the beginning to the end.

When the apprentice has learned topping in *Class A*, he is transferred to *Class B*. In *Class B* he is taught how to top on a stocking on a legging machine, and he is also taught how to top the stocking at the proper place. In this class he should be taught how to top a stocking so as not to make too much waste and also taught how to unravel a stocking without being wasteful.

After the apprentice has learned topping and can do it not only correctly but speedily, he is transferred to *Class C*. This class is taught how to start the beginning of making a leg of a stocking and how to turn welts. One or two machines are used for this work, and during an evening many welts are made. On a twenty section legger, five apprentices can be taught at one time; each apprentice taking four sections and turning the welts on these four sections.

When the welt turning operation is learned, the apprentice is placed in *Class D* to learn how to straighten needles before placing them in the machine. Teach the apprentice the proper way to straighten a needle and also impress upon him the importance of this operation, especially telling him that all needles must be straightened 100 per cent perfect; otherwise, if placed in the machine, the imperfect needle will cause trouble and make menders.

All needles that are straightened by the apprentice should be examined by the teacher, and those that are perfect should be kept to be later used for teaching the apprentice how to put needles into the machine and plier them.

After the apprentice can straighten needles properly before placing them in a machine, transfer him into *Class E*. In this class the apprentice should be given a section on a legging machine, and for a start, have him take 20 needles out of the center of the needle bar and put in 20 other needles that were straightened by apprentices in *Class D*. The reason they should be taken out of the center is that there is no danger of interfering with the needles that the narrowing fingers work upon. Teach the apprentice how to plier needles, and as he becomes proficient, increase the number of needles until he can put 50 needles in a machine and plier them as straight as they were when the machine was first purchased. As the needle is the most important part in learning the art of knitting, this is one operation to which the teacher must give a great deal of attention.

After needle pliering is learned the knitter is almost ready for a machine, and *Class F* is formed in which to put on the finishing touches. In this class the apprentice is taught how to plier narrowing points, how to set narrowing fingers and how to take out narrowing holes. It is also advisable to let him make a few sets of hosiery for several evenings, under supervision, so that he will gain confidence.

This would end the training period, and as a rule, the apprentice is capable of operating a machine after he has had this training.

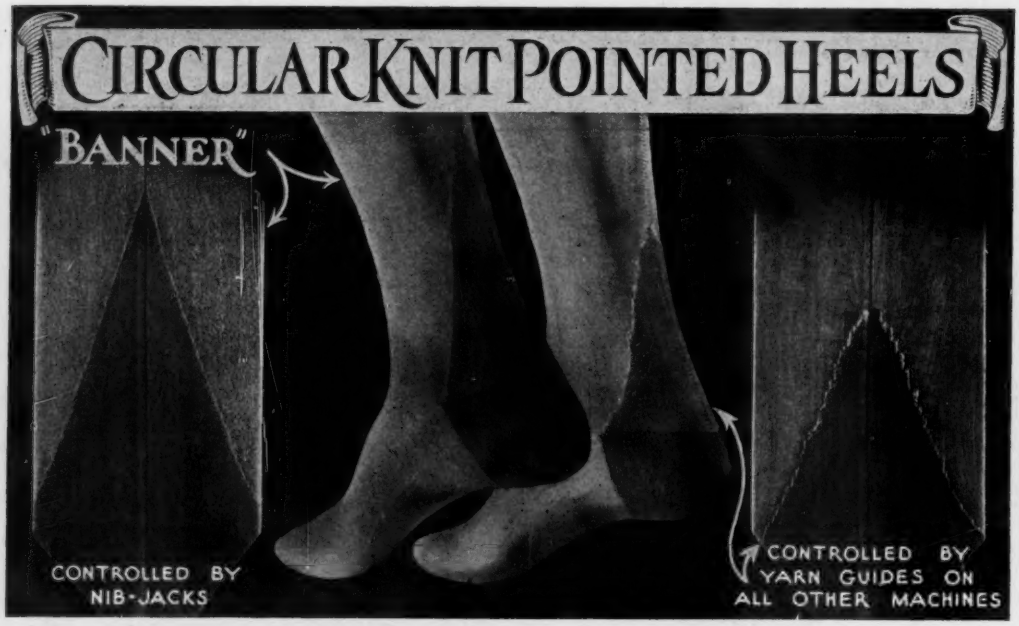
The general training in how to operate a machine in order to make a stocking from beginning to end, is, of course, learned by the apprentice while working as helper to a skilled knitter. As each apprentice is promoted to another class, the skilled knitter is so informed, and the helper does the operation he has just learned during the day work, thereby getting more practice. As an illustration, one apprentice has learned topping in *Class B*, and is now transferred to *Class C*. The skilled knitter is informed that his helper can top on a stocking, and so, from that time on, the helper tops on as well as the knitter.

One important reason why each apprentice should learn topping first is that this determines whether the apprentice has good eyesight. Without good eyesight he would be a failure, and by learning topping first, one can find this out. If poor eyesight exists, then it is well not to trouble any further with such a man.

In conclusion let me say that by patience, good teaching and following this system I have just described, one can not fail to secure skilled workmen, and usually they are the men who appreciate the effort that was made to train them, resulting in very few ever resigning to go elsewhere, and in general, the manufacturer has a more contented body of workers. The quality and quantity produced is of the best, because each and every apprentice has had personal attention during the training period, and when ready to operate a machine of his own is skilled in each operation necessary to make the product as wanted by the manufacturer.

Georgia Association Moves.

The executive offices of the Cotton Manufacturers' Association of Georgia have been removed to Rooms 917, 918 and 919 Atlanta Trust Company Building, Atlanta, Ga. They were formerly located in the Commercial Exchange Building.



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A glance at the above illustration will show you the marked contrast between the Pointed Heels made on "BANNER" Nib-Jack machines and those of all other makes using other methods.

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The A B C of Dyeing

Some Causes for Spotted Work—Watching the Water Supply and the Use of Good Filters a Vital Necessity.

BY NOEL D. WHITE.

PART SIX

There is nothing more disheartening to a dyer than to be called in the inspection room time after time to be shown work that is not as it should be, when he cannot figure out the cause of his bad work. If something has happened to a particular lot and the dyer sees that it is the result of some accident, then he knows that what has happened in this case is not likely to happen again. It is when the reason of his bad work is obscure that he must do a lot of investigating, seeking the means to stop at the source the trouble which produced the damaged goods. And when he does not seem to be able to put a stop to his bad work, then his mettle is put to the test. Sometimes the cause of his trouble is not under his control, but he or someone else must find out what it is, and correct it.

Some years ago I secured a job in a big plant that was started in a city in New Jersey for dyeing silk piece goods of all descriptions. They had started with a lot of new dyeing machines; some domestic, others imported from Europe. They were preparing to do an immense amount of work, and had large capital to work with. I was one of half a dozen dyers, and to start out each one had a machine or two to work with, and one or two men to help. From the very start we ran into trouble. Every piece of silk we dyed came out more or less spotted. Sometimes the spots would be one color, sometimes another. For instance, a blue piece would be spotted with red; a red or a yellow would be spotted with blue. Hardly a piece could be dyed perfectly free of spots. They looked like mildew spots, but could not be mildew because they appeared soon after the pieces were dried and all goods were dried in a hot chamber immediately after having been dyed. We had to strip them and dye them over again, sometimes three times, and then we had to let them go and reduce the price of the dyeing or pay damages.

The buildings we were in had been used as a dyehouse for dyeing silk skeins before this firm took them over, and we thought that the spots were caused by dyestuffs that had been carelessly handled, and had lodged in the walls and on the rafters of the building. We took a day off and washed and whitewashed the whole inside of the building, every nook and corner was gone over carefully, but when we started dyeing again we found that was not the cause. Spots appeared just as before, and it sure was discouraging. I was given the job of doctoring all the damaged pieces, and believe me I had my hands full. Half of the operators were working for me helping to strip and re-dye spotted pieces.

Someone suggested that possibly a rival concern was paying some spy to work the mischief in our plant and damage all the work possible so that we could not make a start without losing a great deal of money. We were all very watchful. One day during the lunch hour one of the workers was caught dipping a small bottle attached to a string into a barrel of Patent Blue we kept in solution for immediate use. One of the dyers promptly jumped on him, gave him a severe beating and took him to the office. He said he had caught the offender throwing something into the barrel, and he was sure that was the cause of all our trouble. We found out the poor fellow was taking some blue to take home to his little girl to use to dye Easter eggs.

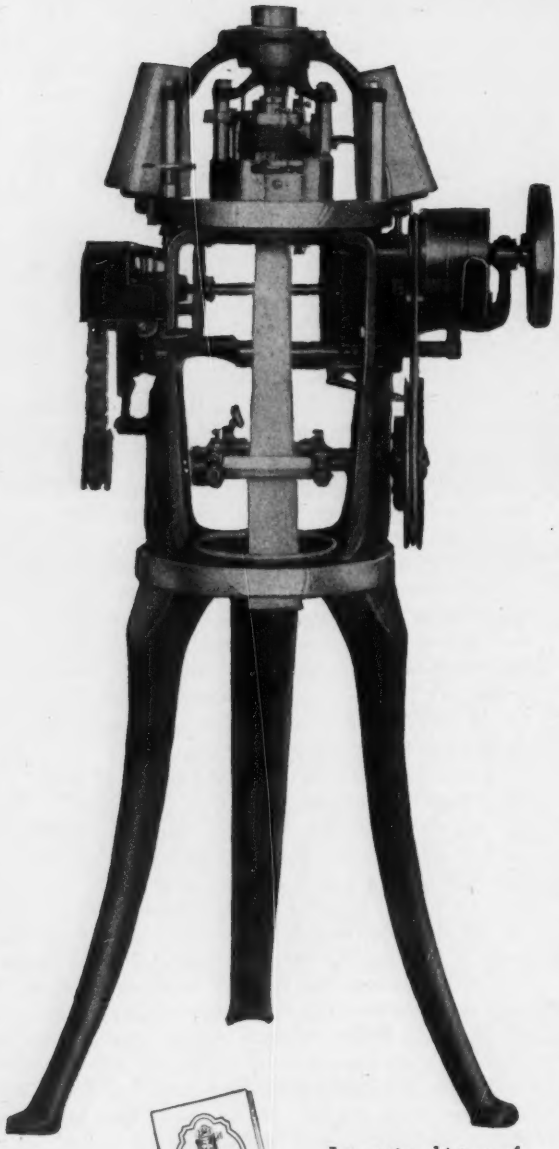
Finally the superintendent decided that the water was the cause of our trouble. The water we used came from the river that ran near the back of the plant, coming into a basin excavated for that purpose, and pumped from it into vats on top of the dyehouse. During the time the skein dyehouse was closed, and the circulation of that water had stopped, the water had kept flowing into the basin, carrying a lot of impurities from up the river where other dyehouses were located, and when they stopped the flow in the basin and drained it, cleaned it and installed a filtering system for the water before it was pumped into the vats above the dyehouse, then the spots disappeared and our trouble from that source ceased.

A good filtering system for the water used in dyeing is a necessity for any dyehouse that aspires to the production of first-class work. With a good filter, hard water is made soft, reducing the amount of soap and chemicals that would otherwise be necessary; muddy water is cleared up, enabling the dyer to produce clear and brilliant colors that would be utterly impossible to produce otherwise; and the dyer is assured of having uniform water the year around regardless of what may be up the river, or what flows into the lake from which the water comes. When the dyer knows that his water supply is always clear, soft, plentiful and dependable, he has no need of worrying from that source for he surely needs his peace of mind for other kinds of worries that fill up his daily routine.

Maybe his water supply piping is getting rusty; the galvanizing has worn out of the iron, and during the night and especially over the week-end, the water standing in the iron pipes becomes rusty and the lot that gets the first flow is likely to get much damaged goods in it. Of course that is avoidable by using a little common sense and flushing out all pipes the first thing in the morning and especially on Monday morning. The careful dyer always does that, but sometimes that function is left to the mercy of some employee who is liable to forget. Also, the tank supply should be flushed out, and washed every so often—at least once every six months or a year—but is it ever done?

I know of a mill that in seven years has flushed their tank once only, and that was when, the tank having run empty, the water coming in from the top had stirred up at the bottom so much slime that on coming out and into a machine where a lot was being blued after bleaching it turned that bleach to a dirty cream color. The dyer knew what had happened, and stopped operations until after a man had entered the tank with a broom, and swept the tank from top to bottom; but that did not save the bleached

Compare



the

fabric

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production

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simplicity

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lot from being spoiled. The dyer told the manager that what he had done then should be done periodically, but to my knowledge it has never been done since. It will be done again, however, when another lot gets spoiled. The dyer has no control in such a case unless he takes things into his own hands and that is liable to get him in "Dutch" with his immediate superior, so he lets things take their course until something happens and then he has a good alibi anyway.

Sometimes the knitter decides to change the knitting oil on his machine, someone having persuaded him that he has a better oil than he is using, or a cheaper one. That oil may look good and may do the work better, and may contain some mineral oil that is sure to cause mischief in the dyeing.

I know of a mill where they started using an oil containing a large percentage of coal oil in it to help make the knitting easier on the top of the heels, which were knitted with boiled off silk. That made a very strong heel top right where the stocking is generally worn out the quickest, that is at the back over the shoe top. That oil worked fine until the goods left the knitting room to be sent to the dyehouse. Here things began to happen. On dark and medium shades the effect was slight; hardly noticeable. On white and light shades the dyer could get no color on that place so heavily spliced. At first he thought the penetration was faulty. A sickly yellow, that could not be covered, was seen on every stocking right over the heel, sometimes yellower on one side of the seam than on the other; sometimes even showing in streaks in the looser knitting in the vicinity of the heel top. At first the dyer thought that the boiled off silk used in that splicing was a yellow gum silk badly boiled off, and blued in the silk mill to cover the defect. He went to the knitting mill and got a cone of the boiled off silk, run off some silk from this cone to analyze it for any dyestuff used to deceive, but could find nothing wrong with the silk. He started complaining that there was something radically wrong somewhere, and he wanted the help of the manager in order to stop the bad work in his dyeing. At first nothing was done to stop it, but at the insistence of the dyer the manager decided to investigate a little. Together they went to the knitting room and after questioning the overseer they finally found out that they were using this kerosene impregnated knitting oil. If it was doing so much damage they were going to stop using it. They knitted some stockings using another oil, and gave them to the dyer to boil off, dye and report the result. The results were as the dyer expected. Heel tops were no longer yellow, and dyeings were as good as ever. So that oil was discarded, but not before it caused a lot of damage, and worry to the dyer and all concerned.

In a case like that I doubt if even the dyer could have foreseen that in using kerosene in the knitting of the goods would boil off yellow instead of white. The best procedure would have been to knit a few stockings and send them to the dyehouse to try out, which the knitter said he did, but which, evidently, was not done.

A dyer of my acquaintance got a job in a hosiery mill just starting operations. It was a progressive mill, nothing but the best was going to do here. The dyer was very able, and soon after taking charge of the works went to the boss of the inspecting room and told him he wanted his cooperation in order to get the best results possible in his work. If there was anything in any way that was not right, he told him he should tell him, and show it to him so he could correct it. He also told the boss in the boarding room if his goods were not soft and easy to board, that he wanted to know it so he could do better. This man promptly reported that while the goods were soft and had a good feel when finished they were hard to board, not slippery enough.

The dyer was finishing his dyeing with nothing but a small amount of acetic acid, so he decided to use oil. He was not familiar with any of the sulphonated oils in the market. There were not many anyway in those days, and he knew how to make an oil emulsion that would just serve his purpose, so he bought a gallon of olive oil for trial. With a pint of this oil, a pound of soda ash and a little water, boiling the whole together carefully for a few minutes and adding this solution to the last washing and working in the machine about ten minutes, he got a finish on his goods that when brought to the boarding room the boss declared were the best and easiest to board that he ever had. He was praised high and low for the finish he got on his goods. As long as he prepared the oil himself he got good results, but when the work got heavier and he was called to more pressing duties he decided to teach one of his helpers how to prepare that oil finish. He selected the best man he had, and in no time this man thought he knew all about it until things started to happen.

One day a lot of goods that had been dyed a light grey came out all full of oil spots. The boarders had not seen them at all, but when the lot got to the inspecting room, the inspector soon detected them and showed them to the overseer. This man should have gone to the dyer, told him and showed them to him, but he thought it was his duty to go to the superintendent instead, and to the manager also —probably to show them he was on the job and was earning his salary. They got together and decided that those oil spots came from the knitting room, and that the lot had better be thrown into black bags and re-dyed black. Of course, in those days black was very popular and easy to sell.

Another lot was given to the dyer in place of the spoiled one, but not a word was said to him about the other one. Maybe the superintendent took the blame for the knitters and let it go at that. The next lot came out just as spotted as the one before. Again the superintendent was called in, and this time he went to the dyer, told him about the lot that had been re-dyed black and about the one that had been put in its place, and had come out full of oil spots, and that in his opinion had not been boiled off right. Those oil spots, he said, came from the knitting machines, and should have disappeared in the boil off. He told the dyer he did not like the soap he was using, and he wanted to boil it off his own way with another kind of soap; he never asked the dyer what he thought about it, simply told him what he wanted to do. That he was hurting the dyer's feelings he had not the slightest idea and did not care anyway. The dyer, however, knew his business and went to look at the damaged lot. One look at those spots showed him what was wrong, and he told the superintendent that he could clean out those spots without any trouble or cost, and it would be better than re-dyeing it into black, but if the superintendent thought he could show the dyer something he was very willing to learn. If his feelings were injured, he did not show it at the time, but was ready to give the superintendent a lesson. He told him he was

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ready to do the boiling off according to his instructions.

But, in the meantime, the dyer had made some investigations of his own. As I said before, after a look at those oil spots he knew where to find the cause of the trouble. He had instructed one of his men, the one he thought was the brightest, how to prepare this oil finish and cautioned him that it had to be done carefully or trouble would surely come from it. He was finishing another lot just then and had put the oil in the machine, but the oil was not emulsified properly and was floating on top of the water in small and numerous discs the size of a penny. On emptying the machine all the floating oil would rest on the goods, and would show up as the ones they found on those lots of which they had complained. If the inspector had shown them to the dyer the first time, he could have fixed it, and prevented other lots from getting grease. On dark colors they did not show very plainly, but on light shades they showed up very prominently. A lukewarm two per cent solution of soap would remove the spots completely, and that was what he did to all the work that was finished that day but he did not breathe a word to anybody why he was doing it.

He wanted to learn how to boil off silk from the superintendent. That dyer had boiled off silk for a number of big plants for over twenty years, and knew how to handle silk as well as the best in the country. Yet—he was now going to be shown how to prepare a boil off. He did what he was told to do by his superintendent, then dyed that lot as he did the other two and let the same man prepare everything and finish it. Then the superintendent, who had been watching more or less closely, took it and gave to the boarders a few dozen to finish. The dyer had been watching, also, but he only watched the oil that had told him the story already, and he was now figuring how to avoid further trouble.

When he narrated this episode to me he had tears in his eyes. The best finish in the country, he said, and I have to give it up because it is not fool-proof. I have now to look for a finishing oil that I can let any idiot use without danger of injuring the goods. He selected a good grade of sulphonated oil, and his olive oil emulsion was thrown in the discard.

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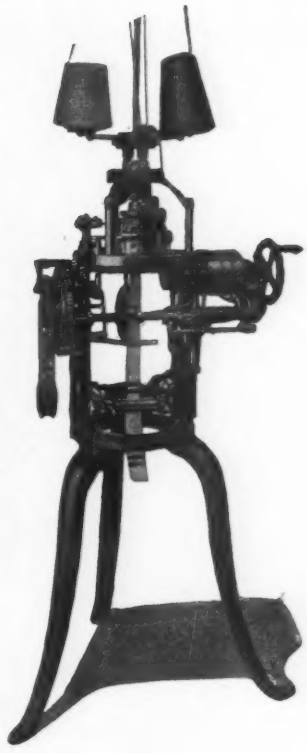

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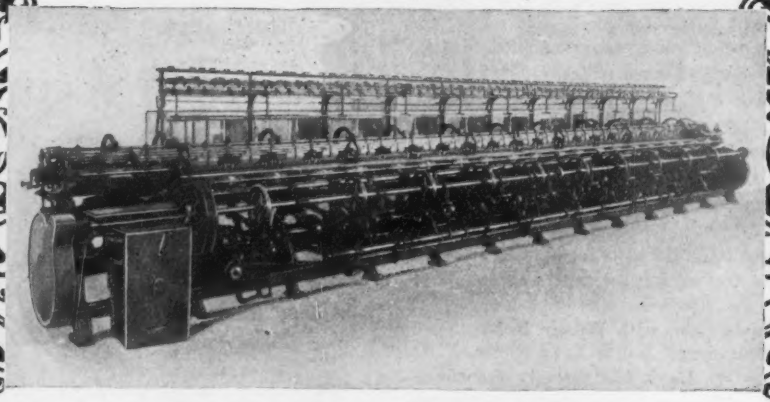

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The Evolution of the Seamless Hose

BY WILLIAM DAVIS, M. A.

The production of ladies' hosiery on the seamless principle is one of the most important branches of the knitting industry and although at first sight it appears that the article is being largely standardized by the perfection of the automatic hose machine, closer examination shows that important changes are being effected all the time. It is well known that the full-fashioned stocking is regarded with ever increasing favor by the wearer of hosiery, due in some measure to the advertising and branding which have been adopted by the manufacturers of those goods. Buyers are now becoming increasingly discriminating with regard to the niceties of hosiery and the producers of seamless articles are concentrating their energies on removing some of the graver defects from the seamless article. What are those defects, one may ask, for in a technical journal it is well that these shortcomings should be deliniated without fear or favor, and without hurt to the susceptibilities of the machine makers who have achieved such remarkable results in rendering the making of a stocking so completely automatic as it now is.

One of the first deficiencies of the seamless stocking as compared with the full-fashioned is that it is devoid of the finer points in shape and style. In the full-fashioned article the smallest requirements or modifications of size and shape can be truthfully interpreted and it is a certain liberality of measure in regard to such items as heels and toes which has been such a point in their favor. But it is not only in the direction of giving more liberal dimensions that this type of article excels but also in the matter of giving smaller widths when necessary, a shining example of this being at the ankle which, in the ordinary seamless article, is too ample of material. In the full-fashioned article the fabric is attenuated in amount and reduced in width to the required degree. Unfortunately all the modifications required in a stocking leg shape have to be brought about by alteration of the size of the stitch at the various points of the article and up to the present writing the knitting machine is incapable of giving exact shaping by this means. In woolen articles further shaping can be given on by stretching over the shaping boards when they are in a damp condition and the heat combined with the plastic nature of the material allows the yarn to stretch wider for the calf and to curve into the ankle. This property is also present to some extent in the cotton article but in artificial silk and even real silk, the tightening of the stitch tension does not produce sufficient difference to the shape of the article.

In the accompanying Fig. 1 is given a hose made on the seamless principle where the desired shape as shown is given by shaping on the hosiery forms, along with the tightening or slackening of stitch which is possible on the machine. The welt portion is shown at *A* and the shape of this is determined of course by the length of the leg. In what is known as the continental style the stocking is very long and like certain types used in gymnastic exercises. In such cases it is essential to have a wider portion at the very top and this has to be obtained by a slackening of the stitch over the normal size, combined with the continental shape of hosiery form where the extreme top is forced out even wider than that shown in the illustration. To do this branch of the trade requires a suitable series of hosiery forms to the shapes required. The welt portion is continued as far as *B* and this portion is usually turned round unless in the case of the automatically turned welt when the double fold is made on the machine itself. In any case for goods to be sold at a cut price, opportunity can be taken of changing the yarn at *A* where the welt is folded over the center line, the upper portion going to the back and the lower portion to the front.

As this portion of the yarn is slack, or small in relation to the gauge, then the texture can be slacker so as to stretch out as required. But in silk stockings opportunity

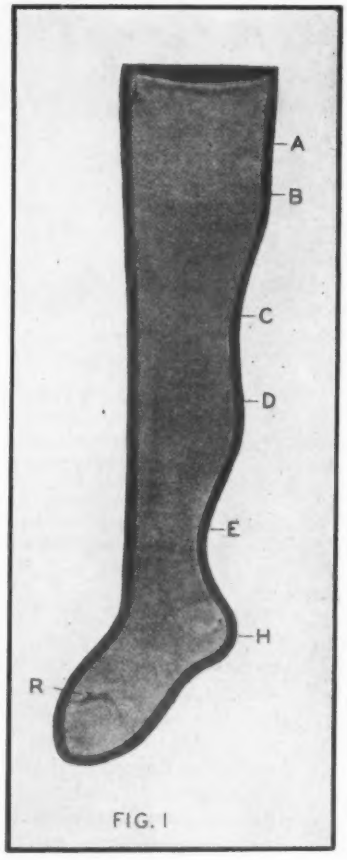
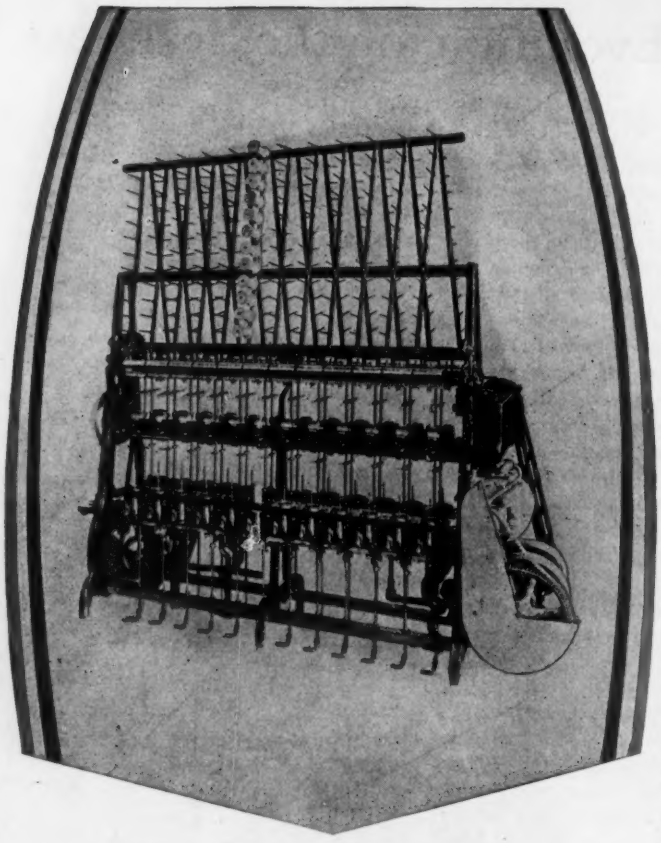


FIG. 1

is taken shortly afterwards of introducing the anti-run-back course which is made on several machines for the purpose of catching any lines of stitches which are laddering in the goods. This thread is introduced between every second loop in the width and serves to trap any stitch which is running downwards, at least until such time as the wearer is able to mend it fully. It may be said that the seamless stocking has a greater tendency to ladder over that made on the flat machine using the spring needle. The spring needle in some inscrutable manner imparts a firmer skin to the texture than the latch needle and the stitches do not show the same tendency to run.

There is, of course, a further point that in making hose



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in flat fabric which is afterwards seamed, the yarns are settled into the fabric in a perfectly comfortable manner. In the seamless machine by altering the tension of the stitch to reduce the width, certain strains and stresses are created in the thread which disturb the stability of the fabric and set up a slipping among the stitches. With a fabric made to the exact width, the stitches stay in that position all the time as they have not to be pulled about to give the shape, that having been done by increasing or decreasing the number of loops.

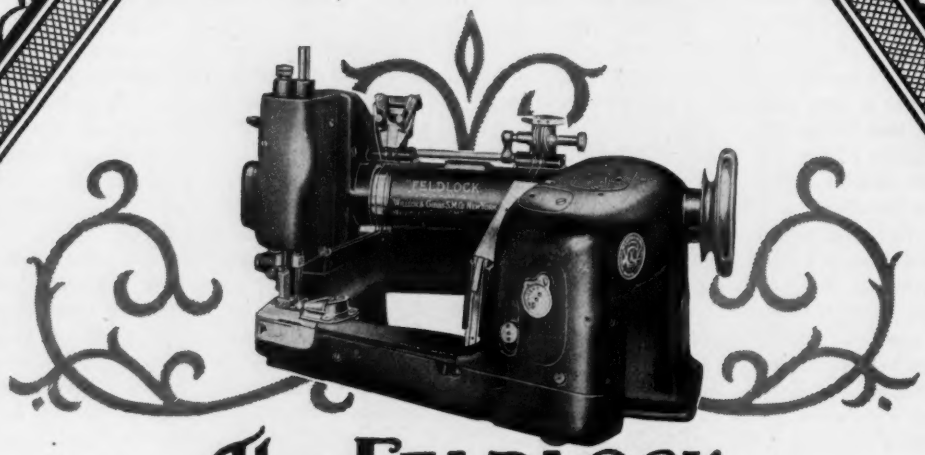
It should be stated that the shape of a seamless stocking is adequate for a larger number of wearers whose limbs are of the ordinary type, not showing too great a difference in width between the calf and the ankle, and for slender forms the tightening of stitch combined with subsequent shaping on the hosiery boards gives quite good results. In these days of sport and greater exercise of the limbs, however, a change has taken place in the physique and the calf is now developed to a larger extent than formerly while the low shoe does not allow of any hiding of the slack portions which may show at the ankle. The hose is now much more fully displayed than formerly and true shape is being asked for more and more. In the same way the ankle appears to be contracted to a larger extent in relation to the calf. In the ordinary article, therefore, the fabric has to stretch unduly at the calf, giving a thinner texture, while the ankle is too large and hangs slack on the wearer. I illustrate a new method of overcoming this difficulty where the inward curved shape at *E*, see cut, is obtained by actually carving out a piece of the double fabric on the seaming machine, this portion being immediately seamed together by an overlock stitch.

At *E* also is introduced the high splicing which is, of course, intended to give increased wearing power to the part. These splicing yarns are a difficulty with the hosiery manufacturer as they have to be very thin in order to be accommodated in the stitch side by side with the ground yarn; they have also to be soft and absorbent in character and the spinner often has difficulty in getting the fine counts in soft twist of sufficient strength to stand the strain of knitting. To accommodate the extra thread in the stitch there is an arrangement in the sinker ring by which the sinkers allow for a slightly greater stitch just where the splicing enters the texture. The splicing is called high because it starts high up on the heel and this part has been the subject of much experiment, as in certain machines there is a tendency for the splicing thread to be introduced in an irregular manner, not always entering the fabric on the same needle. On ordinary goods the operator can often see this and pay attention to the tension of the thread silk which is a big factor in the problem.

In artificial silk, however, the goods are made all white and it is impossible to note defective splicing until they have been dyed when the artificial silk shows up a different color to the cotton or woolen splicing. So serious has this become in certain branches that artificial silk yarns are now being impregnated with a tinted oil which gives the artificial silk a blue aspect in relation to the splicing so that any deficiencies in the entry of the splicing thread can be noted immediately and steps taken to correct the defect. The reader may wonder why the oil? Well, this is selected to be of such a nature as will lubricate or soften the rigid nature of the artificial silk as well, as it is often too rigid in character to curve symmetrically into the knitted stitch. Investigation of the matter has shown, however, that the design of automatic hose machines may be modified, and has been modified in certain cases, to allow of a quicker delivery of the splicing thread into the needles of the machine. In many types the splicing yarn is swung into the needles with a swinging motion which involves air friction so that the thread is agitated in the process and enters at different needles on succeeding courses. By a recent improvement the splicing thread does not move but it is the needles which are made to arrange themselves to take the splicing which is still, and this is done at the same needle every time. In other words it is the needles which do the moving, not the splicing thread.

The splicing is too often an evil necessity which offends in the matter of appearance. In certain types of full-fashioned machines the splicing is transformed from a blemish into a feature of some ornamental value. Instead of being brought into view abruptly to extend half way round the stocking, it is introduced gradually, beginning at a few needles in the center of the back of the leg, the extent being increased gradually at each course until the full extent is covered. This produces what is known in the trade as pointed heels and they have become very popular. At *R* in the illustration is shown the position of the ring toe which is a much-valued factor in hose production, in connection with the join which requires to be made across the toe of the article. Unless the ring toe is produced, we have on each side of the join, loops of a different consistency. The row of stitches nearest the stocking leg are thinner and of the same yarn as the ground, those of the lower row are thicker in nature owing to the splicing thread being present in addition to the ground yarn. This means that on one side of the join we have thick stitches being joined to thinner ones which gives a jagged appearance to the seam. To make both sides of the same consistency an extra course of thread is inserted right round the hose at the last course before the toe is started, and this course is used to link up the toe; as the stitch is now of the same bulk on both sides of the join a more even result is achieved.

As a further compliment to the full-fashioned stocking, machines are made to give imitation or mock fashioning marks down the back of the leg of the article. These are inserted several stitches on each side of the center needle in the back and consist of tuck stitches, where a needle does not clear or knock over its loop but misses one course of knocking over. As a result an opening is made in the fabric and these are introduced at regular intervals down the hose as required. These marks give the appearance of a full fashioned article but, of course, in the latter type the narrowing is done by superimposing of two edge stitches on the top of the other two so that no opening is made but a slight elevation due to the two lots of stitches standing on top of each other. In any cases of doubt this is an unfailing test. It is, however, a mistake to say that these marks are introduced entirely as an imitation of the full-fashioned article because they do fulfill a useful function. In seamless hosiery it has often been objected to that there is no guiding line to show where the center of the article is which shall act as a guide to the launderer in folding the articles after washing, and the complaint is that after washing they tend to assume a corkscrew shape and twist 'round the leg. When the imitation fashioning marks are given these act as a guide to show where the



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article should be folded after washing. This is even more pronounced when the line of seaming has been attached as this has to be added exactly on the center needle at the back. It can be added automatically but in some cases preference is given the to the method of adding this extra seaming thread on an overlock machine afterwards. In doing this it is important to get the correct line and a form is added to the right of the seaming machine over which the leg of the hose is stretched so that the worker can draw it straight and pass the fabric into the machine to have the thread added at the correct line in the hose.

In some cases the split foot has been adopted in the hose machine where the machine works at half speed right down from the point where the splicing is first introduced, the silk working on the one half and the cotton or wool on the other. Difficulties arise in getting the threads to enter on their correct needles on each side and such feet tend to appear bulging as the thicker material on the foot of the sole so-to-speak overpowers the silk upper portion and it appears rather unshapely. There is also a disadvantage in that the speed is reduced to about half during the entire length of the foot, not only while making the heel and toe. The automatically turned welt has been quite successful, particularly since the dial has been improved so that it is less liable to go wrong; there has also been a greater degree of skill on the part of the operator and particularly the mechanic, larger numbers of which are now mastering the details of these attachments and are able to keep them in running order.

The seamless automatically-turned welt of course attaches itself inside on every second cylinder stitch so that the stitches are slightly elongated at this point. In the full-fashioned welt, the original stitches are bundled back on to the needles again at the fold-over so that the welt is a perfect one, the stitches showing a complete join and continuing down the back of the leg. In turning the wider top inwards difficulty is often experienced in getting it to seam perfectly as the fabric is larger in width than that to which it is being attached, giving a rather unsightly appearance. This is being remedied in what is known as inverse welt which gives a more accurate join of the different fabric circles.

The Arrangement of a Hosiery Dyehouse

Notes and Suggestions for the Old or New Dyehouse as Well as Some Operative Methods of Interest.

BY "DYEHOUSER."

The large number of hosiery mills starting up on ladies' full-fashioned hosiery in the South alongside of the older established seamless mills, has caused many changes in the dyehouses and their equipment.

In the ordinary full-fashioned mill being started at present there is usually only a small production of 100 to 300 dozen of hosiery per day. This calls for several sizes of small dyeing machines, of Monel metal, usually of the rotary type with individual motor drive.

With a range of machines of 5, 15, 30 and 60 pounds capacity, the stock room and the sales office can take care of small lot orders resulting from Dame Fashion's demands for sudden changes in the very complex line of subtle pastel shades that are required by the fairer sex throughout the country.

The dyehouse of the smaller size mill, where quality goods are finished, must be equipped with as much care and foresight as they say Milady's boudoir is. A popular type of construction with mills of smaller productions is to have the dyehouse at the side, or in the rear preferably, and then utilize the height of both floors (two-story construction in this case) in the dyehouse. The high ceiling is an absolute necessity for a well ordered and dry dyehouse.

On high quality full-fashioned hosiery in the chiffon, semi-chiffon and service styles, the "up to the minute" mills are using the bag system throughout the mill; from where the knitting yarns are placed in bags to be taken to the knitting rooms, the goods being bagged from each operation and inspection and taken into the gray stock room for storage; and from there they are removed from the sized bags and counted into bags for dye lots and go right on through the dyehouse into the extractors and boarding room. Then as soon as the re-dyes are checked over they are bagged up again.

Referring back to the high type of ceiling in this kind of dyehouse, so many mills have sacrificed a proper location and space by locating the dyehouse in the basement or some out-of-the-way part of the mill where the ceiling is low and usually always damp and dripping from a condensation of the vapors.

In addition to the high ceiling, this should be covered with a thin layer of cork for insulation purposes, to prevent the formation of condensation and its dripping off of the ceiling onto the equipment and the goods being processed.

The dyehouse should have a northern or northeastern exposure, where all shades may be matched and new batches compared. This is better than having to rearrange a formula for some shade just because it looked different in the selling agent's office in New York or in the superintendent's office.

If there are many windows in the dyehouse, there should be a heating system connected with the boiler for blowing hot air into the dyehouse during the fall and winter months when condensation is at its worst. This will greatly reduce the condensation of the vapors rising off of the tubs. By using hot air, the full value can be obtained from the use of the fan for the dyehouse equipped with rotary machines, and, in the one using the open type paddle machines where the open hoods and suction ducts can be operated by a suction fan. These two systems as shown in the sketches aid in ridding the dyehouse of condensation and dripping over the entire room.

The greatest economy that comes from these simple changes is the reduction in the amount of re-dyes and the prevention of the spotting of grey goods. Especially will this cause trouble where dyehouses do bleaching and dyeing in the same room, when a black and white are being run side by side, a sight you will see in some mills.

The sketch in Fig. 1 gives my idea of a suitable ar-

rangement for a dyehouse. The roof or top of the dyehouse should be a foot or two higher than the rest of the mill, if the mill is of two-story construction, for then all excess moisture that is forced out of the dyehouse by the fans will be blown clear of any windows in the top floor of the main building, which is usually kept well regulated as to humidity and should be free from objectionable fumes and vapors from the dyehouse, such as those which originate

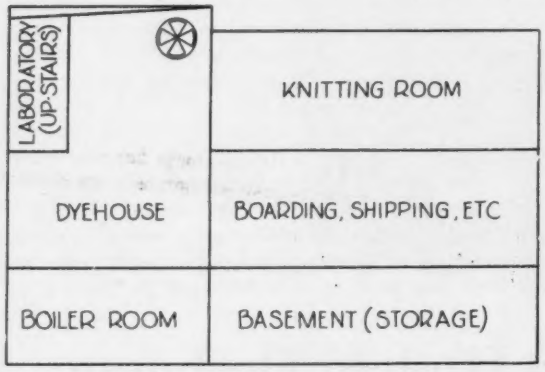

FIG 1

in the degumming of silk and the stripping of hosiery. Where heavy-laden vapors contain sericin and other oily substances settle on the finished stock in the shipping room, water and oil spots will probably be caused.

In this outline of the arrangement of the dyehouse, the laboratory was placed upstairs in the northern or northeastern corner of the building, whichever is more convenient; this leaving more space on the ground floor. With a satisfactory height for the ceiling, the moisture would not bother the dyestuffs and laboratory; while the mixing tub for the peroxide bleach can be located on one side of the laboratory, or over the water softener. There a Monel metal pipe can be connected onto the mixing tub and the bleach drain directly into the machine that is to be used for bleaching.

Locating the laboratory upstairs would be okeh if the dyeing equipment is of the rotary, closed type, but if the open face paddle machine is used, then the laboratory should be on the ground floor. A special arrangement should be made whereby there would be no danger of dyestuffs and dirt blowing from the laboratory into the dyehouse. For the paddle machines, the belt drive or chain drive is best, or otherwise the motors might be shorted and thrown out of commission by excessive vapors coming off of the machines. On the paddle type I would use a belt-driven fan with a hood and suction arrangement for each machine, as shown in the sketch in Fig. 2.

The shut-off or suction dampers can be opened or closed according as the machines are in operation or not, for on a bleach the machine is usually run below a boil and will not cause any vapor. By shutting off one vent not in use, greater suction can be had on the other machines that are running at a boil and from which the steam vapors are coming. This arrangement can be completed at a cost of from ten to thirty dollars a machine. The ceiling should be lined with cork and only the highest grade galvanized sheeting should be used on the suction heads and piping so as to prevent rusting and chemical corrosion.

By remodeling the old dyehouse in such a way one can work wonders in improving the quality of the work turned out. Just give the dyehouse superintendent a little cooperation and good equipment.

The foregoing points of improvement will cut out condensation, wet and sloppy floors, and prevent numerous accidents, and they will also create real cooperation for better grade products at a lower cost per dozen of finished hosiery.

For a mixing tub to use for the peroxide bleach, I would secure a large terra cotta pipe, cement one end with a Monel metal piping for outlet and drainage purposes. This outfit can be made at a small cost, and is much more satisfactory than using an old barrel and mixing up the sodium peroxide and letting it stand over until the next batch of white is ready for the bleach. By this arrangement, one can secure standard results on his white and half-bleach bottom work and be able to check results with accuracy.

There are various methods and agents for cleaning purposes after the machines are used for the various operations such as dyeing of heavy shades and black, the degumming of pure silk, the boiling off of rayon that has mineral oil mixtures on it, and after hosiery has been stripped in a machine.

For this purpose, the best product is a suitable cleansing agent of the concentrated alkali type which possesses emulsifiable properties to the nth degree. This cleansing agent must retain the property of emulsifying all oils and sludges that accumulate from the dyeing, bleaching and degumming operations, when the cleaning operation is carried on at a boil. Such an agent will clean all coloring matter off and keep oily matter and sludge in solution or so emulsified that the tub is left quite clean after using, following a

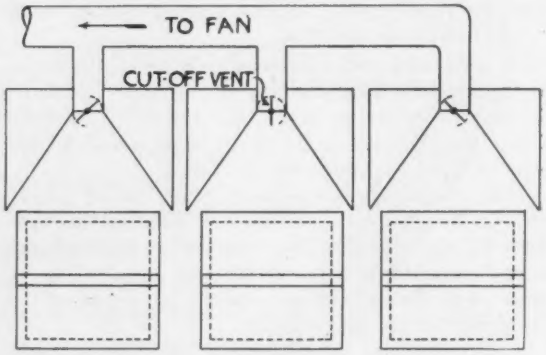

FIG 2

heavy shade or degumming bath. After a black it is sometimes best to run one per cent soda ash and one per cent hydrosulphite for twenty minutes, then add the alkali cleaning agent in three to five per cent, running at a boil for 30 minutes. On iron package machines, such as the Franklin, Hornbuckle, etc., and the various types of beam dyeing machines, this cleaning compound usually cleans the machines in a shorter boiling out period than a mixture of caustic soda and soda ash does on the wooden type of rotary and paddle machines, which are still being used in places making cheaper hosiery. A mixture of chemic and soda ash will usually clean up the tubs, even on the most difficult colors.

There are various stripping agents made of titanous chloride as a base and so stabilized as to secure the maximum stripping action from the product. These products are not very economical for cleaning purposes, as they are best

(*Continued on page* 108.)

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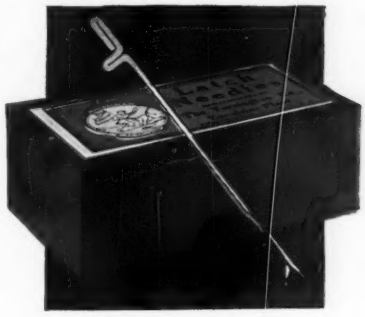

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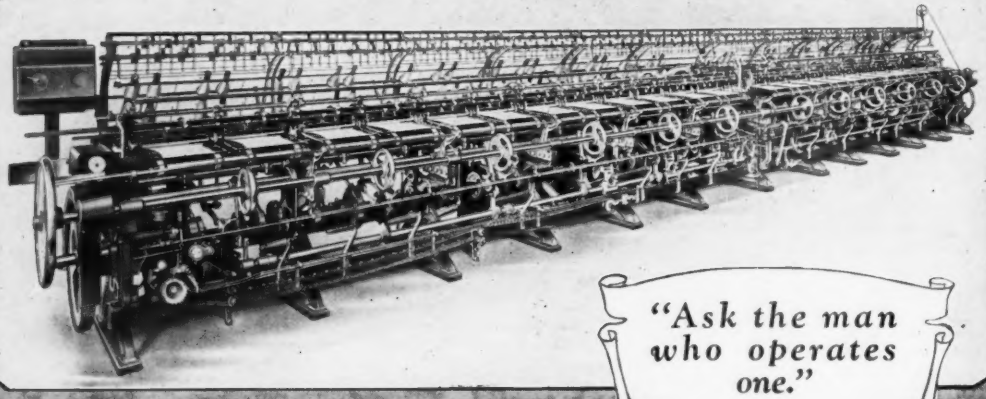


"Ask the man who operates one."

KNITTING KINKS

PRACTICAL DISCUSSIONS BY COTTON'S READERS ON VARIOUS KNITTING SUBJECTS

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packng and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Preventing Pulled Threads.

EDITOR COTTON:

One subject in particular I would like to see covered in your "Knitting Kinks" department. I think it would be a good idea to have some discussion as to various means of preventing pulled threads, especially in a full-fashioned mill, which is the kind of plant I am primarily interested in.

Along this line, we have a man who spends practically all of his time going around the plant with emery cloth, touching up rough places that develop on the surfaces of the machines, tables, topping tables and stands, knitters' boxes, etc. Also, we use an anti-rust solution on the machines, which does not oxidize the metal, but does turn it somewhat darker, and we find that a few applications is sufficient to put on.

I would be glad to have you publish letters from other readers which will tell how they have adopted other means for preventing this evil. P. F. (N. C.)

Overcoming Uneven Stitches.

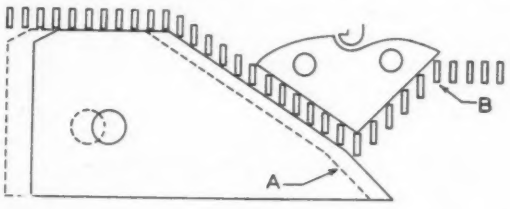
EDITOR COTTON:

This is in reply to the question of "B. G. (Cal.)" in regard to a 3½-inch, 240-needle Model K machine knitting a shorter stitch on the short butt needle side than on the long butt side of the hose. As there are various things which would cause this trouble, it would be best to go into detail on the various causes and remedies.

It was stated in this man's letter, which was published in the September issue of COTTON, that this trouble resulted from a broken finger spring when transferring on the heel and toe, jamming the cylinder needles. This being the case it would seem the trouble is in either the cylinder needles or the condition of the cylinder walls. Whenever a smash-up occurs on a machine, the cylinder walls are more or less bent to one side. These walls, of course, must be straightened or uneven friction on the needles results.

If there is more friction on the short butt needles than the long butts, an uneven stitch results, such as stated. This is due to the cylinder needles as they pass underneath the left hand stitch cam forming the stitch. The needles with the least friction pulling down a trifle lower than the tighter ones. If a new set of long butt needles was inserted in this machine, the friction on these needles should be checked with the short butts to be sure they are the same. The writer has also had experience with variation in the length of cylinder needles, finding at times a box a trifle longer or shorter than standard. It would be a good idea to compare lengths of the long and short butts for variation. It would be a good idea to put a trifle more friction on the long butts to get out of this trouble.

Whenever a smash occurs the left hand side cam as a rule slips back. If this is the case there is too much play between the side cam and the stitch cam, resulting in an overthrow of the needles, causing this trouble. The remedy here would be to shove the side cam toward the stitch cam as far as it will go without binding. The illustration



shows how these two should be. The dotted line in the side cam shows where the end of the side cam lays when it has slipped away from the stitch cam, leaving too much play and chance of overthrow of the cylinder needles.

The bottom of the stitch cam is another cause of this trouble. If the bottom of the stitch cam is not square, that is, the part toward the cylinder being shorter than the outside edge, the fact that the long butt needles are longer than the short butts, the long butts will draw down further, resulting in a looser stitch on the long butt side than the short butt side.

This man states that he has checked over his inside sinker ring and finds this to be all right. I wish to state that this ring is a frequent cause of this sort of trouble and it should be made certain that it is okeh.

The machine makers are equipping their newer models with an adjustable inside sinker ring, as "B. G." may not know. The remarkable thing about these rings is that regardless of other conditions, as stated, needles, side cams, stitch cams, etc., these rings can be adjusted to even up the stitch in a seconds' time. Instead of being soldered to the

cylinder, these rings are held in place by five set screws. Each set screw has two smaller set screws for raising or lowering the ring as wanted. If the machine is knitting tighter on the short butt side than on the long butt side, all that is necessary is to raise the set screw on the short butt side, which in turn brings the ring with it, evening out the stitch. These rings can be fitted at the factory by sending the cylinder back to the factory, or it can be done at the mill. It would be a worthwhile investment for any mill to equip all Model K machines with these rings, in my opinion.

The outside sinker ring has something to do with this trouble. It should be made certain this ring is on square and not loose.

I would like to refer "B. G." to the "Knitting Kinks Handbook No. 1," on Scott & Williams machines, which is given free with a year's subscription to COTTON. This book contains some of the suggestions given here, and many others, which will help him out. I would be pleased to hear from "B. G." through COTTON as to what he finds the cause of his trouble. CONTRIBUTOR No. 853.

EDITOR COTTON:

I note in the September number that "B.G.(Cal.)" is having trouble with 240 needle 3½ inch Model K machine knitting tight stitches on the short butt needles. He said the brass ring appears to be tight and even and that he put in new sinkers and stitch cams and needles.

I would suggest that he take off the inside brass sinker ring and replace it with a new one, as the ring he is now using is probably warped, which would cause this trouble. I would also suggest that he examine his stitch cams. A stitch cam that is long on the back side will pull the needle further down on one side than on the other and result in this trouble. However, I believe if he will try a new inside sinker ring, or get the one he has now straightened, or on straight, a large part of his trouble will be eliminated.

C.S.(N.C.)

Further Thoughts on Machine Fixing.

EDITOR COTTON:

I have just received my copy of "Knitting Kinks Handbook No. 1," and when I started reading it, I finished it, and now I have got to let off some of the steam that has accumulated. Somebody has said that one of the greatest things in the world is the right of honest men to differ in opinion. My experience and practice forces me to disagree somewhat with the writer of the booklet, and I feel sure you will be willing to publish my views on some of the points he discusses.

(Editors' Note.—The material composing the book referred to was published as a series of articles in the September, October and December, 1925, and January, 1926, issues of COTTON being later published in book form under the title given. This book is available free, one copy being given with a year's subscription to COTTON at $1.00. The book covers the writers' experiences on a multitude of points and problems in the operation of Model K and Model R I Scott & Williams knitting machines. We welcome this contributor's discussion of the book, and shall be glad to receive comments from other readers with differing suggestions to offer.)

I shall take up the points concerning troubles on the Model K machine on which I differ with the man who wrote your book, and give my ideas on them.

First, on "Shears Not Cutting at Yarn Change," he says, "If the shears cut off before the thread gets under them, the trouble is generally due to the shear drum cam being too short. A burr on the dial plate will hold the thread back long enough to prevent the thread from getting under the shears."

Now, here is where the fun starts. When did that shear drum cam get too short? The chances are 99 out of 100 that the machine having trouble has been running correctly for weeks and months, for the machine builders seldom send out machines that have not been thoroughly tested before leaving the factory, and they are usually tested by experts who know their business. When all adjustments are made and tested out, and not until then, is the machine ready for shipment. This machine is taken into some mill and is set up and is run perhaps for weeks and months, and some day it is discovered that the shears are closing too soon to cut the thread as they should, and somebody makes an unusual discovery—he finds that the drum cam has become too short. I would like to ask how a cam made of steel or cast-iron, as the case may be, can come to be too short so suddenly?

In this same chapter, the writer of the booklet says, "If the shears do not cut off, and remain raised, the trouble is due to the shear drum cam being too long, and a little should be taken off of it."

I would like to say that if a cam is too short, a longer cam must be put on, and if a cam is too long, some may best be taken off, but my experience has been that when a machine has been running for weeks or months and doing perfect work, mechanically speaking, that if a cam appears to be too short or too long, the trouble is not in the cam, but in the adjustment of the drum. It is a rule, and practically without exception, that when a man begins to take off cams that become too short or too long so suddenly, he is going to find a real remedy somewhere, but it will not be in shorter or longer cams, rather, he will find his trouble in the adjustment of the drums.

Some men have passed the age of changing cams that do not get longer from age, and few that get shorter from use, and have found that instead of walking about with their thumbs hung high up in the arm-holes of their vest, they can best solve their problems by taking their fingers—about ten of them—and running them into their hair and rubbing their tips close in to the gray matter that lies not so very deeply below the hair roots, and try to find the answer there. It will save many cams, much waste, a large amount of seconds and many dollars to the mill.

Undoubtedly the man who wrote the booklet is better acquainted with the machine than I am, but I feel that my experience has taught me some things that are worthwhile.

I will refer now to Chapter Three. There he discusses the subject, "Switch Cam Off in Corner of Toe." He says, "As the machine transfers into the heel and toe, the switch cam is supposed to pick up the medium needles besides the long butt needles. The machine should be taken through by hand to see if the switch cam picks up the medium needles. If not, this is one of the causes of being off in the corner.

"The remedy is to loosen up the two screws holding the switch cam bracket and push it in toward the cylinder,

then tighten the screws. Put a piece of paper under the bracket to tip it toward the machine. Care must be taken not to tip it too far because when the downpick starts working, the needles as they are picked down will get caught between the switch cam and the cylinder. If the bracket is tipped it should be ascertained whether it is rubbing too hard on the cylinder, which will make a groove around the cylinder. If so, a little of the parts bearing on the cylinder should be ground off. This is important."

I very much disagree with the writer on this part of the third chapter. In the first place, if the switch cam bracket is put on properly, there will be no space in the screw-holes that will allow the bracket to be pushed forward. In the second place, it would not be good engineering to make space in the screw-holes for this adjustment, as it would create a chance for a continued slipping away under strain from the cylinder and cause a great many more smash-ups. The machine builders do not send out machines built that way, and if so-called fixers have filed out the screw-holes in the switch cam bracket to get this adjustment, I assure you they are having all kinds of trouble.

"Put a piece of paper under the bracket and tip it toward the machine," this writer says.

This cam, when put into the machine, is, if properly fitted, ground and finished in such a manner as to allow the needle butts to bear only on the top and bottom edge of the cam near the cylinder. Now, if this switch cam bracket is tipped toward the cylinder, it will allow the ends of the needles to bear on the far side of the cam, and in so doing has a tendency not only to pull the needles out of the cylinder, but makes a heavier strain on both needles and walls.

"Care must be taken not to tip it too far," he says, "because when the downpick starts working, the needles as they are picked down will get caught between the switch cam and the cylinder. If the bracket is tipped it should be ascertained whether it is rubbing too hard on the cylinder, which will make a groove around the cylinder. If so, a little of the parts bearing on the cylinder should be ground off. This is important."

This, to my mind, is not very good advice for a man who is supposed to hold an important position. This tipping toward the cylinder, as I have already stated, will not only give bad results, but it is neither theoretical nor practical, as it throws the whole system out of line. It seems to me that when a switch cam gets into such condition as to have to be pushed in and ground off to make it go, that there has been some jackleg fixer around somewhere. This switch cam is one of the most difficult of all cams to make and fit of any going on a Scott & Williams machine. The builders know it and therefore put their best men on the job in setting up and building this part of the machine.

The writer of the book does not say that the cam in question was new and was a defective part from the beginning, as I have known some to be, and as there are exceptions to all rules sometimes such things as sending out bad parts will occur. But with all that, I feel that putting paper under any kind of a bracket in order to make some little piece of work to get by just for the time is bad fixing. A new cam will cost very little compared to the cost of needles that will be broken and seconds that will be made, to say nothing of waste in yarn; as well as time while worrying and trying to make some worn-out cam do what we all who have ever fixed machines know it cannot do.

My experience in handling steel has taught me a few things, and I have learned that when cams have become so worn that a man must pack up under the brackets to make them reach far enough to do their work, the best thing to do with them is to chunk them into the trash basket and haul them off. The man who tells us how to "pack 'em up and grind 'em off" must have advised the fixer who had been handling some machines that were recently bought by the mill of which I am now superintendent. The drum cams were practically all cut or ground off somewhere, the picker posts were all packed up with sinkers under them, the guard cam on the right-hand picker post was packed up with a needle pack under it to make it pull the needles low enough to keep the picker from lifting two needles, the auxiliary cams were ground off on the bottom and all fixers know that they are only long enough when new to pull the needles barely below the point of the stitch cam. Some of the drum cams were hardly recognizable.

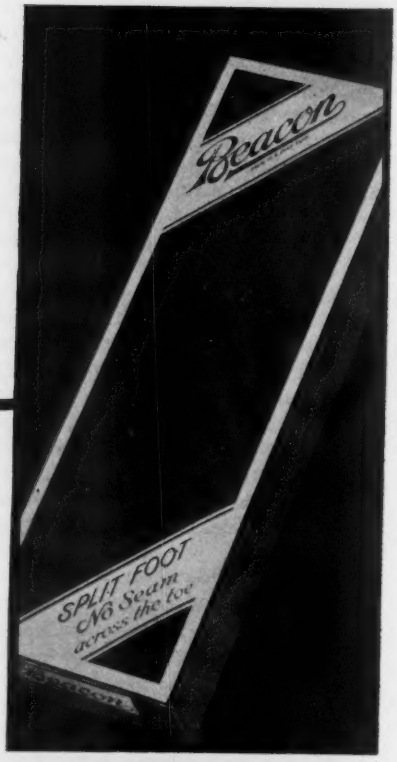
Now, it has been some years since I have fixed machines, but I have some knowledge yet of what fixing is, and if I were to find one of my fixers putting up the kind of jobs I know are done by some so-called expert fixers, I wouldn't keep him in the mill.

No, all the things that are done by my fixers are not perfect, for I have had fixers who did not know, but when I get one who doesn't know and is willing to learn, I try to make something out of him, and sometimes his efforts teach me some things that I didn't know. But there are some things I do know, and I think we who write should stop to think that there are some men who do not know who are coming behind us, and will fall hard over the mistakes we make. One time an old man was journeying, and he was found to be building a bridge across a chasm, and someone stopped and asked him why he was building a bridge, as he was so old that he would probably not pass that way again. The old man answered, "No, I shall not pass this way again and the bridge will be of no use to me, but there is a young man behind me. He will pass this way and I want to make it safe for him." There are young men who will someday pass along the road we are traveling, and we should endeavor to make the way safe for them.

I notice that our friend, in explaining how to concave stitch cams, says, "The concave portions should not be more than ¼ inch long from end to end," and that "not more than 1/16th inch should be taken off at the deepest part."

I wish to comment here just a little. I am not going to argue as to the good or bad part of concaving stitch cams, but back a few years ago concaving stitch cams was unknown to most of us jackleg fixers and we didn't have excessive cutting out in the heels and toes, and very few holes in the gores. I do not agree with this man on one point, namely, that the concave must not be more than 1/16 inch at the deepest part.

I will concede that this is an error on his part, or that he probably did not stop to think that he will have untold trouble if he concaves these cams as much as 1/16 inch. He may not have intended that one should concave quite so much as that, but here is the point: Someone who does not know may try to go the limit and take out the whole 1/16 inch from a cam. Suppose this is good advice. He finds that when he takes out the full 1/16 inch, he is pull-



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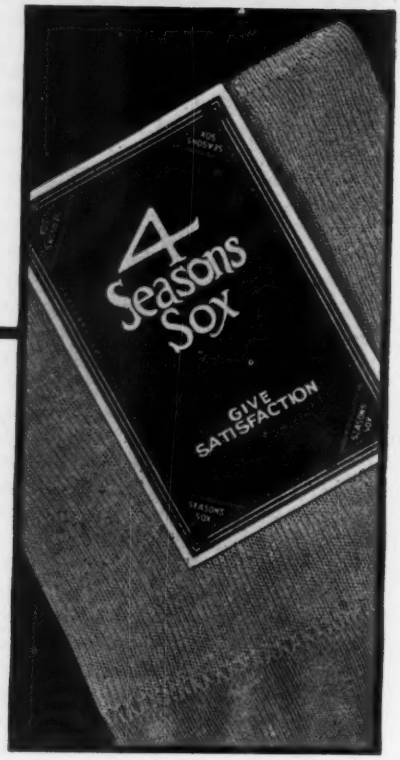


ing nearly straight down on the butts of the needles, but will also snatch off the hook, as well as make it hard on the walls.

I would like to again utter a word of caution about being certain before we write things that are going out into the world. Someone, some day, will try to concave a cam the full 1/16 inch, and will ruin a new set of cams and possibly more than that before he finds he has followed someone's advice into a hole.

As soon as I read this, I went to one of my best fixers and asked him what he thought of concaving stitch cams, how much he thought should come out, and he said his experience had been that a little was better than too much, and when I asked him if he thought 1/16 inch was enough he laughed and said he would rather make it 1/64 inch, that he didn't like putting in walls as well as that. Many of the new cams are not as much as 1/64 inch when they come from the shop.

There are many other things in the book that might be commented upon, but I will let this suffice for this time. I would be pleased to have the other readers discuss any points I have taken up or any of the other subjects covered in the book. PETE (N. C.)

Why the Crepe Appearance on Silk Hose?

EDITOR COTTON:

We are having difficulty in our full-fashioned department with a crepe appearance on our stockings. This does not show up in the gray goods, nor is it very apparent in a stocking dyed black, but it is very noticeable in hose dyed in the popular light shades. I am almost certain that dry silk is not the cause of that and I shall very much appreciate from the "Knitting Kinks" readers any suggestion as to other probable causes of this condition and the remedies for them. L. B. (N. C.)

Stop Motions for Ribbers.

EDITOR COTTON:

A reader of "Knitting Kinks" recently asked if anyone had heard of a device for stopping a ribber after it cuts a hole in the goods or breaks a needle. He said he wanted to learn of any attachment that would do this successfully and without fail immediately after the cut place leaves the needles.

I would like to express a few thoughts on this subject of broken ribber needles and a mechanical device for detecting them.

There are only two main reasons why a needle should be broken. First, a sufficiently large accumulation of lint or a yarn imperfection which will tear off a fine gauge hook. Second, an injured or worn latch. The injured latch being caused primarily by a hole (usually traceable to the yarn) which permits the unprotected latch to come in contact with an improperly adjusted yarn carrier. The worn latch being a result of excessively long usage or an inferior quality of needles.

It is regrettable that a lot of mill men do not reason along the lines of the technical engineer, which is to remove the cause of the effect rather than have a warning device when the trouble happens. The rapid advance of mechanical progress in the knitting machine field has permitted the knitting industry to use the most inferior quality of raw materials with astonishing results. But that does not mean the knitters should blame the machine for imperfect work or resulting trouble.

Some knitting mills using ribbers at the present time have allowed their equipment to lapse into such a deplorable condition of wear that it is amazing that such excellent results are obtained. The machines have been run until the revolving parts move eccentrically (making accurate adjustment impossible). Needles of the cheapest quality have been used to replace those of pre-war vintage, and a yarn of the poorest grade is supposed to knit perfectly under such conditions.

Ribbers put out by reputable manufacturers at the present time are equipped with the best needles and are constructed with a sensitive stop motion and hole detector, which can be placed within 1/16 inch of the cloth, so that with a fair quality of yarn imperfections should be nil. The stop motion can be adjusted to stop the machine at the slightest yarn defect, and if a knot, which is too small for the smallest knot catcher, does cut a hole, the protruding ends will trip the hole detector. Or should a latch become worn or injured the resulting tucks will pile up the fabric so the hole detector will stop the machine.

If your inquirer will keep his machine in perfect condition and use a reasonably fair grade of yarn, I do not believe he will have any use for any other protective devices than those with which the latest style ribbers are equipped.

CONTRIBUTOR NO. 2611.

Is Night Shift Topping Practicable?

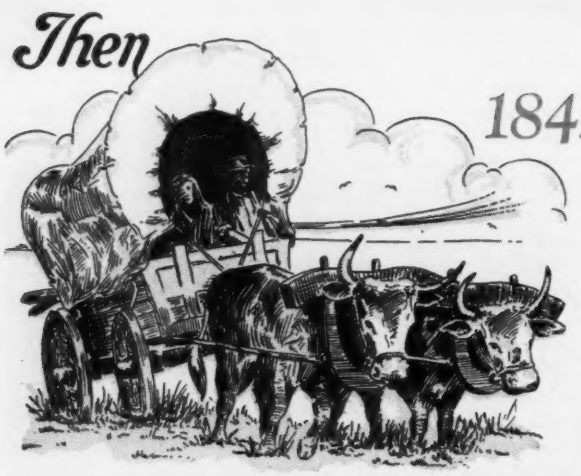
EDITOR COTTON:

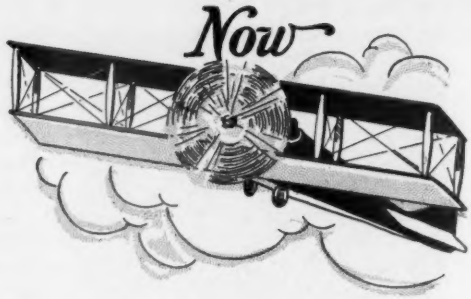
I would like to see some discussion in your "Knitting Kinks" department with reference to the advisability of doing topping work in full-fashioned plants on the night shift. It happens that we apparently will soon be forced into this move, and I want to get all of the information and advice possible regarding it.

Our particular situation is that our original installation of machinery consisted of three leggers and two footers; by operating the leggers on day and night shift, and the footers day time only, we have been able to take care of all of the topping on the day shift.

However, we have recently installed four additional leggers, which throws us out of balance under our former schedule, although I think these additional machines were planned for at the beginning. In any case, it looks like we are going to have to do some topping at night, and I would gladly read any advice or information from mill men who have done or are doing this, with any suggestions they may have for me. I am particularly interested as to whether they believe the effect upon the efficiency of the operative would make it inadvisable. I might say that our plant is equipped with the Cooper-Hewitt light. In the seamless game, I know, we found it impracticable to do looping at night, and there is some similarity between this and topping.

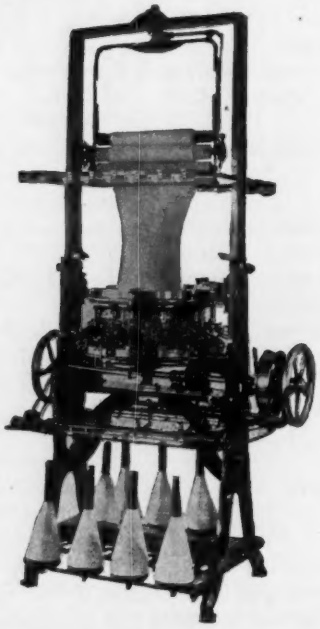
While other plants may not be in our same condition, from the standpoint of machinery, I am certain there are other mills, particularly those in the South, who are or will be confronted with this same situation. The average mill's margin is not great enough to permit sufficient footers to take care of day and night operation of the installed leggers, practically forcing them to do night topping. I there-





New 18-20 Model

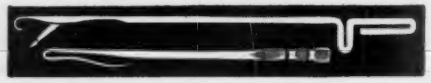
Multiple Feed
Circular Rib
Spring Needle
Cooper Knitter



The New 18-20 Model Cooper Multiple Feed, Circular Rib, Spring Needle Knitting Machine with Stop Motion, specially designed to Knit Silk, Artificial Silk and Rayon Yarns. This new model is now perfected and samples of fabric produced from this model will be sent upon request.

Oldest Makers of Spring Needles in the United States

From a hand-made, sparsely produced needle, the Cooper Line of Spring and Latch Needles has grown with the textile industry into the most complete in the United States. As the first manufacturers of Spring Needles we have retained a life long prestige—accounting for the fact that Cooper is to Needles what Sterling is to silver.



Charles Cooper Co.

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Bennington, Vermont, U. S. A.

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877 Warren St., Albany, N. Y.

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121 East 24th St., New York City

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Agents: MELLOR, BROMLEY & CO., Ltd., LEICESTER, ENGLAND. ELBROOK, INC., 50 Peking Road, Shanghai, China, Agents for China and Japan.
M. BUCHSBAUM, Calle Absina 1814, Buenos Aires, Argentine

fore believe a discussion of this from some of the more experienced full-fashioned manufacturers will prove of great interest. CONTRIBUTOR No. 3011.

Topping Back Versus Back-Winding.

EDITOR COTTON:

There has been a number of letters appearing in COTTON as to the best practice in regard to press-offs on full-fashioned machines; whether to top back or back-wind the yarn in the good portions. I would like to give my experience in this connection. I once took charge of a mill and found on arrival that I had about a ton of press-offs to handle, and the only solution was to back-wind, so I did this by putting an additional conditioning wick or trough in the winding, and treating the yarn with a mixture of a small amount of kerosene combined with cocoanut oil in addition to the regular conditioning solution, and so got by with it after a fashion.

However, as a general thing, I consider back-winding inadvisable in any case, and absolutely impractical using silk under 8, 10, or 12-strand; even then the knots give considerable trouble. On a chiffon hose made from 5-strand silk, the selvage is necessarily so tight that if back-winding you will find in the re-knitting that if it does hold up, many of the fibers in the silk will be broken and will stick out from the strand, making a very unsatisfactory appearing stocking.

We top back everything except where the press-off is so short as to make it uneconomical, and then we take the loss in the silk and do not run a single bit of back-wound yarn. On Saturdays, running a half-day, we top back all of the long press-offs together, but the rest of the time the man keeps them and puts them in as the machine reaches the different lengths. M. I. T. (N. C.)

Preventing Oil Stains at the Gore and Instep on Hosiery.

EDITOR COTTON:

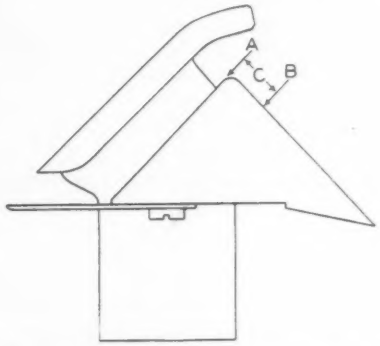
In the June issue of COTTON, "Contributor No. 4256" inquires how to remove oil from the gore and instep of hosiery. Perhaps I can give a suggestion on this that will be of help and interest to this man and other readers of COTTON.

Before doing so, however, let us analyze just what takes place when the stocking is knit. In the knitting of hosiery, during the revolving motion, all the needles are down and in action for the production of the leg, and during the reciprocating motion only part of the needles for knitting the heel and toe are down.

Because the machines operate at a relatively high speed, they require a substantial amount of lubrication, and the result of this, in the course of time, is an accumulation of dirt, oil and particles of metal in the needles and needle cylinder. As needles are only lifted a small portion of their length during the knitting, oil accumulates on the needles and needle cylinders below the portion wiped by yarn, but the oil, dirt and metal do not have an opportunity to accumulate on the upper portion of the needles, this being due to the constant wiping of the loops of yarn in the formation of the stitch.

When the machine is shifted to the reciprocating motion for making the heel and toe, the long butt needles are thrown up out of action and the oil and dirt which had collected on the needles while making the leg is transferred to the yarn that these idle needles hold while they are out of action. This is especially noticeable at the instep.

In some mills, this oily accumulation occurs frequently, and as it requires several hours of tedious work to remove the cylinders, needles, etc., to clean them, this much needed work is often neglected. The Victorious Engineering Company have developed an attachment which I believe will



The cam referred to in the accompanying letter. "A" shows the height to which the needles rise with the special cam. The wiping space where the needles are cleaned is indicated by "C." "B" is the height to which the needles rise while making the heel and toe.

aid the contributor complaining of this trouble, and others who may be having it. In the application of this device, a cam has been devised which is placed at a suitable position on the machine, and which raises all the needles higher than they are raised when knitting the heel and toe. Then the machine is started knitting with soft cotton, and this cotton wipes all the needles further down the shank of the needles than they could otherwise be wiped. It is evident that with the use of the cam and the proper oil for cleaning the needles, it is a much simpler matter to free the needles and cylinders from grit dirt, etc., in a few minutes' time.

CONTRIBUTOR No. 820.

A Ball-Bearing Portable Electric Blower.

For blowing dust out of motors, machinery, shafting, etc., with powerful blasts of clean, dry air, a portable type of small electric blower has been announced by Breuer Electric Mfg. Co., 844-856 Blackhawk St., Chicago, Ill. It is called the Breuer's ball bearing Tornado portable electric blower No. 6, and is equipped with a 1/3-hp. G-E motor mounted on Norma precision ball bearings, requiring no oiling. It weighs seven pounds and requires no installation—20-foot reinforced cord and separable steel covered plug with wood handle connects the blower to any electric socket. Extra high pressure delivering a larger volume of air at a higher speed is one of the features claimed for the device. Suction attachments and a dust-bag can be supplied to convert the blower into an electric suction cleaner; and a spray tank can also be furnished for attaching to the nozzle, for spraying insecticides, etc.

Paul Knitting Mills, Sherman, Texas, have installed 16 additional knitting machines.

The Yarn Market

Philadelphia, Pa., October 17th, 1927.

For the month preceding this writing, it is necessary to record a general loss in values for most of the yarns passing through the Philadelphia cotton yarn market. This trend reversed the situation obtaining up to the time this report was written for the preceding similar period, because at that time rates were taking a ride upward in a way which seemed certain to induce more substantial immediate buying and forward covering.

A continuation of the rising attitude seemed impossible, however, in the face of conditions. The factor largely responsible for the improvement in rates during that time had been the raw cotton market with its changing price; and this same influence was responsible during the past month for the reversed trend in yarn circles.

At the same time, while yarns went down with cotton after going up with it, the improved conditions gave the selling end a firmer stand while they occupied the more influential position, and the result was perhaps a healthier market. This was demonstrated in part by the fact that prices failed to sag to the limit on price concessions along with cotton, the rates, even with the declines, being still higher than the position occupied prior to the previous upward movement.

Though cotton determined very largely the course of yarns, there were no drastic revisions occurring. The influence of the raw staple market was more or less attributable to its own nervousness, rather than fluctuations of any notable proportions. This uncertainty which prevailed, and persisted with the issuance of conflicting crop estimates and reports, tended to influence a state of disorganization in yarns that worked to hold business up and make buyers continue to procrastinate.

The first week of the period reported here found the market in an unstable and uncertain condition, with dealers and spinners emphasizing the fact that the bullish side of the market had not spent its influence, by any means. Still, the chaotic condition in the cotton world tended to make buyers cautious.

Continued uncertainty prevailed during the following week, during which October put in its appearance as the beginning of the final quarter of the calendar year. There was little change in conditions. After progressing nicely along with a gradual, reasonable rise, the choatic cotton slump wrecked considerable of the foundation, making it essential for most of the selling end to start in again. It was strongly felt, however, that the antics of the market were drawing closer attention to the yarn situation on the part of the buying end, and that after the temporary influence of the state of unsettlement, this more careful investigation as to conditions would prove beneficial. Certainly inquiry was manifested to a great extent, and indications were that users' stocks were getting lower and lower in the face of more or less regular business of their own.

The third week found things clearing up fairly well, especially since the market had possession of the Government's figures as of October 1st, and had thoroughly digested them. It was felt that about the time of this writing there would come a general tendency among buyers to cover themselves for the remainder of the year. The retardation caused by the raw cotton break seemed about overcome.

Last week found this optimistic feeling growing among the factors in the market, it being contended that while business was still being held back, at the same time there was imminent a general buying movement which would be healthful, coming in on a market established with a firmer, stronger basis.

Little can be said of the actual business placed during the past month other than it was a continuation of close buying, with very few irregular features in evidence.

Philadelphia prices on October 15th follow:

Single Skeins.

4s to 8s	33½	10s	34½
12s	35	14s	35½
16s	36½	20s	37½
24s	38½	26s	40½
30s	43		

Single Warps.

8s		10s	35½
12s	36	14s	36½
16s	37	20s	38 @38½
24s	42½	30s	44
40s	54		

Carpet and Upholstery Yarn in Skeins.

8s 3-4 hard white warp twist	35
8s and 9s tinged tube	32
8s 3-4 hard twist waste	31

Two-Ply Skeins.

8s	34	10s	35
12s	35½	14s	36
16s	36½	20s	38
24s	40	26s	42
30s	43½	40s	53

Two-Ply Warps.

8s		10s	36
12s	36½	14s	37½
16s	38	20s	38 @39
24s	41	26s	43
30s	43½ @44	40s	54½

Frame Spun Carded Yarn on Cones.

8s	33½	10s	34
12s	34½	14s	35
16s	35½	18s	36½
20s	37½	22s	38
24s	39	26s	41
30s	42½	40s	53

30s double carded	44
30s tying in	40

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	50	20s	53
24s	56	30s	57 @60
40s	65 @68	50s	70 @75
60s	80 @85	70s	90 @95
80s	1.00@1.10		

Single Combed Peeler Yarn on Cones.

18s	49	24s	53
30s	55	36s	62
38s	64	40s	65

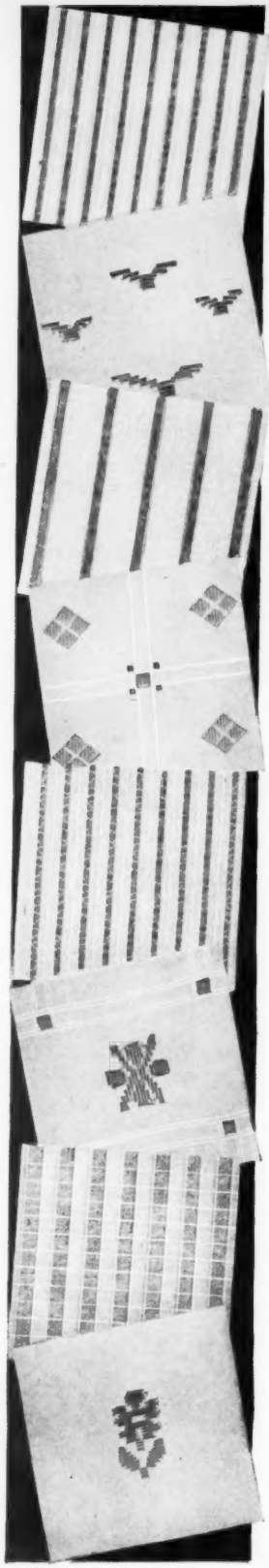
Mule Spun Carded Yarn on Cones.

10s	39½	12s	40
14s	40½	16s	41
18s	41½	20s	42
24s	43½	26s	44½
30s	46½	40s	57½

Mule Spun Combed Peeler Yarn on Cones.

10s	48	12s	49
14s	50	16s	51
18s	52	20s	53
22s	54	26s	56
28s	57	30s	60
36s	63	38s	64
40s	67		

National Aniline & Chemical Co., Inc., 40 Rector St., New York City, announces the introduction of National Erie Fast Brown G2r Conc., yielding redder and brighter tones than National Erie Fast Brown GR, it is stated, its properties being similar, with better fastness to storing and adaptability for dyeing in the presence of copper. It is recommended for use alone or in combination on tans, khakis and browns; after-treatment with chrome and copper renders the shade somewhat duller, increasing the fastness to washing and light, the company states.



Highly Mercerized, Clipped, Dotted, French Marquisettes, merchandised by Pickwick Draperies, Inc.
"Ebard" Shirtings converted by E. O. Barnard Co., Inc., New York City.
"Novelite" Draperies converted by A. W. Baylis Co., New York City.

COLOR

THE MASTER SALESMAN

THE days of dull, drab bedrooms are passé. Modern women demand bright, cheerful colorings that make this room as attractive as the living room.

Multicolored curtains and overdrapes for windows are recent developments, but already the sales of these fabrics are far ahead of the white and plain colors. Women want pink rooms, blue rooms, children's rooms, and each new demand means increased sales.

Likewise in shirtings, the modern trend is toward a wider use and range of colors.

Among the leading fabrics that cater to the demand for COLOR are "Novelite" Draperies, "Pickwick" Draperies, and "Ebard" Shirtings. COLOR is the dominant feature of these products. This makes it a vital necessity that the component yarns be colored by an organization having facilities for dyeing and delivering yarn in a wide range of colors on short notice.

One of the reasons for the popularity of Franklin Process colors is that the very nature of the process permits consistently better deliveries than when the yarn is colored by other methods.

Quick delivery of dyed yarn to the mill is of vital importance to the merchandiser in meeting the demands of an ever-changing market for new and timely designs.

We offer you the same advantages that have contributed to the success of "Novelite," "Pickwick," and "Ebard" products — prompt deliveries, efficient laboratory service for matching shades, thorough penetration of every fibre of the yarn, and the Franklin Package which permits maximum economy in handling the yarn.

A Franklin Package of Dyed Yarn.

It will deliver freely by rotation or over end.

With these services, is it not possible that you, too, will find more profits through the increased use of COLOR?

Put your problem up to us and let us give you our opinion.

It costs nothing to find out.

Write us to-day.

FRANKLIN PROCESS COMPANY

Largest Job Dyers of Yarn in America
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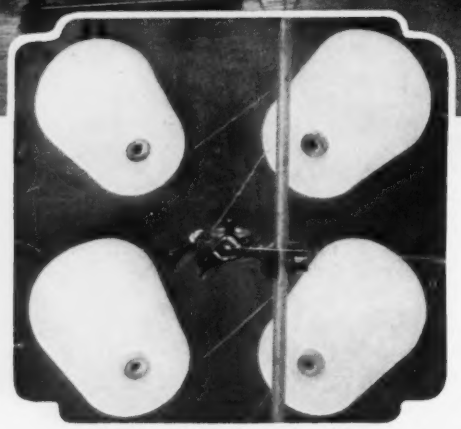
Ad. No. 226. Printed in U. S. A.

LEESONA UNIVERSAL HIGH-SPEED WARPING



Showing magazine feature of creel, by which continuous warping and a speed of 250 to 300 yards per minute are obtained, as against 50 to 60 yards per minute by slow-speed warping.

1/2 to 2/3

REDUCTION IN LABOR COST

This highly important saving is effected by the Leesona Universal High Speed Warping system. 1350 spooler spindles and 17 slow-speed warping units have been replaced in this mill by only 672 high-speed, cone winder spindles and four high-speed warping units.

The labor cost of warping and creeling has been reduced one-half to two-thirds; a great saving in floor space has been effected; there has been a marked improvement in the quality of the warps.

Warping is continuous except when removing a full beam or when an end breaks, due to the magazine cone supply feature of the creel. Dead yarn is entirely eliminated. Exceptionally uniform warps are produced since each end is tensionized uniformly in the creel. The original elasticity of the yarn is retained, as there is no inertia to overcome, as when warping from rotating supplies.

Further details regarding this system, including the No. 60 GF machine which prepares the cones, will be furnished on request.

THE LEESONA TARGET

"The Solution of Every Winding Problem"

Two essentials to success in any business are a *clearly defined target* and an *unwavering aim*. A third of a century ago the Universal Winding Company established for itself, as a goal or target, "the solution of every winding problem." Since then this Company has built over 2,000,000 winding spindles and marketed over fifty different kinds of winding machines. Many of the originals are still the only outstandingly successful mechanisms of their kind on the market.

This Company is at present the largest organization in the world making winding machines exclusively. Supremacy in size is the logical result of supremacy in demand. Supremacy in demand follows leadership in conception, execution, materials, and service.

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UNIVERSAL WINDING

Ad. No. 5—Printed in U.S.A.

The Knit Goods Market

Three specific complaints of conditions in the hosiery primary markets are heard. There is ground for each, depending upon the source. They are:

"A shortage of certain classes of goods for both spot and future deliveries."

"While there is business aplenty to be had, there's no money in it for mills."

"On the conservative scale of operating by distributors, there is too much production."

Accepting the assertions of some mill agents and merchants, there is a scarcity of high-grade fancy half-hose to command a dollar a pair in retail stores. Such statements are borne out by the fact primary market buyers are finding it difficult to get acceptance of orders and mill agents are in competition for desirable mill accounts.

The prices at which some representative types of full-fashioned silk hose were offered at department store special sales in October supported the contention there was excess production of some lines and scattered holdings of goods that had lost in sales value in competition with more popular constructions. There are accumulations of certain kinds and an underproduction of others. That there are stocks available for immediate use is shown by the fact some manufacturers are forcing sales to retailers, which accounts for the conservatism of jobbers. Arguing backward, the attitude of distributors is the explanation for accumulations.

Taking a broad view of the situation and averaging the bright and dull spots, there is seen a healthy situation in hosiery as a whole, and every prospect for improvement in the next six to eight weeks. Following mid-December the lull that is usual immediately before and after the swing from one year into the next may be looked for. Merchants who wait for the lull to do their buying will be minus goods at the height of a busy season.

Perhaps the more sensational happening in hosiery in the last month or two was the introduction of a line of womens high-grade seamless silk that is precisely what the term seamless implies, in the fact the stocking does not have the seamed back or any mark for simulating the full-fashioned. For the first time in years the mock fashioned was thrown into the discard, by at least one manufacturer.

The new stocking is from the mill of F. Y. Kitzmiller Sons Co., in Reading, selling to the retail trade direct, under the well known trade-marked brand, "Notaseme." It had been tried out on a number of models and came on the market in a somewhat small way toward the end of October, being then in the hands of but a few retailers. It is knitted on fine gauge machines, a considerable installation of which is planned, the mill displacing all of its coarser gauge equipment, it is stated. The stocking justifies at least one claim made for it—distinctiveness. That it presents a certain refreshing individuality cannot be disputed. Whether it will be accepted in the trade remains to be determined. It is understood a manufacturer in the South brought out a seamless redivivus a few weeks ahead of the Kitzmiller company, but it is not knitted on such fine machines, and the report that the southern mill stole a march is not confirmed.

In recent winters, it transpires, certain shades of silk have been worn as underhose, substituted for worsted. The no-seam seamless, it is held, would be better suited to that purpose than the full-fashioned as an underhose, as it would necessitate no registering of seams. It is stated in the trade that underhose of one construction or another will be worn quite extensively in the coming winter. Several manufacturers report taking a fair amount of business in very light weight worsted understockings.

Since the beginning of Fall there has been a pronounced increase in the distribution of women's seamless silk and silk-and-rayon. The New York representative of the Shoaf-Sink mill, in Lexington, and the Parks, in Asheboro, reports both of these North Carolina mills operating to capacity, and, at times, running the plants day and night. Three seamless mills in Reading, Pa., are maintaining like schedules, but they are exceptions among mills in the North. Some others in Pennsylvania are, however, selling full-time output. But among the more enthusiastic believers in the future of the seamless there are a few who find it desirable to include full-fashioned in their lines.

A manufacturer of seamless exclusively states that while there is well sustained demand from his established trade, it is difficult to get an entree to a buyer when soliciting a new account, with nothing but seamless to offer. He recently canvassed almost 100 mills in a search for 42-gauge in the gray. He received less than 20 replies to his letter of inquiry and only two quoted a price. Most of the others replied to the effect they were so well supplied with business from their regular trade that they could not consider the proposal. Not one southern manufacturer quoted or made an offering. The disappointing result of the query is accepted by the inquiring manufacturer as indicating that there is no excess production of or deficit in demand for 42-gauge hose, which at the moment is as popular in the trade as was 39-gauge a few years ago. That was, of course, his reason for specifying 42. The correspondence uncovered ample supplies of 39-gauge. There is said by some factors to be so much of this available that it is difficult to obtain satisfactory prices for finer gauge.

There is ample evidence that manufacturers of 39-gauge hose find a ready market for it. Price is, of course, in its favor, and as produced in some mills it opens as attractively as 42. Retail prices in many shops are not helping sales of the latter. Most stores are adhering to $1.75 and $1.85 as their standard prices, although $12 a dozen is the quotation of a number of establishments selling direct to retailers. Primary market operators are meeting the price of the 39; most of the stores are not. But many are exploiting 39 while leaving it to the customer to make his or her selection from character of fabric and acceptability of construction. The buyers for numbers of jobbers and retailers give less attention to the matter of gauge than to merit, and this certainly is true of a great majority of shoppers. Some dealers who exploit gauge are making trouble for themselves, paving the way for more misrepresentation than has had to be contended with, is the opinion of many manufacturers and distribu-

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tors, who point out that the number of needles employed in the knitting of hosiery never was used as a talking point in selling seamless goods.

That selling hosiery to the consumer and holding the consumer trade is an achievement no less than manufacturing is exemplified, perhaps, in the success of the Berger chain of stores in Philadelphia. Berger's started seven years ago with one store. The seventh was opened in October, and is the concern's third in the fashionable shopping center. The company depends upon its show window displays for attracting the consumer. It has but three prices—$1.15 a pair for sheer service weight silk to four-inch welt, $1.25 for chiffon silk to top and $1.35 for medium weight silk to top.

The seventh store was opened on the success of the sixth, for which the Bergers pay an annual rental of $30,000. Two others cost the company $8,000 and $12,000 a year respectively in rentals. Such outlays and the fact the chain is growing at the rate of an additional store each year answer the question whether Berger's employ a profitable method of distribution. The company buys in the gray and has the dyeing and finishing done under contract, and sells only full-fashioned silk, although having an occasional call for seamless, say store managers.

Berger's, in being able to give a good account of themselves as retailers, are no different in this respect from numbers of manufacturers, notably in the smaller class, as gauged by their mill equipment. Of several in Reading which might be mentioned for illustrating a point, none are operating more than 20 full-fashioned machines, and each concentrates on sheer service silk to welt, all operating 42-gauge machines. Two employ day and night shifts of operatives and the other will do so, beginning shortly. None is accumulating stock, goods being shipped out as fast as finished and packed, and one will install additional machines, the new equipment to be of 45-gauge. All sell to jobbers. Other mills in Reading are operating plants day and night, one selling to retailers having maintained such a schedule for months. All of the mills in Reading are having at least single shift capacity production.

Some few mills in Philadelphia are operating day and night. Most of them in October could have accommodated more business without resorting to night work. This is true particularly of the larger establishments. The complaint that "there's no money in the business" is common in Philadelphia, where operating cost is higher than in most cities. Some have reduced this item in the last few months, others will reduce it, from present indications, and still further cuts are by no means improbable. In the meantime expansion of the full-fashioned industry has practically ceased for the time in Philadelphia, where, it is noted, there has been no new mill promotion for a year or more, while in the suburbs a few new establishments are under way. There is a plentitude of full-fashioned knitters, as was evidenced a few weeks ago when a Philadelphia manufacturer advertised for a footer and had 56 applications for the job within 12 hours.

That there has been overproduction of women's full-fashioned silk admits of no dispute. But there also has been much curtailment, and there is a better balanced situation. New York mill agents are in competition for full-fashioned accounts. They are hard to get, with many mills selling output satisfactorily and others having connections which it might be unwise to disturb. A few weeks ago four selling agents were out in the open for the ac-

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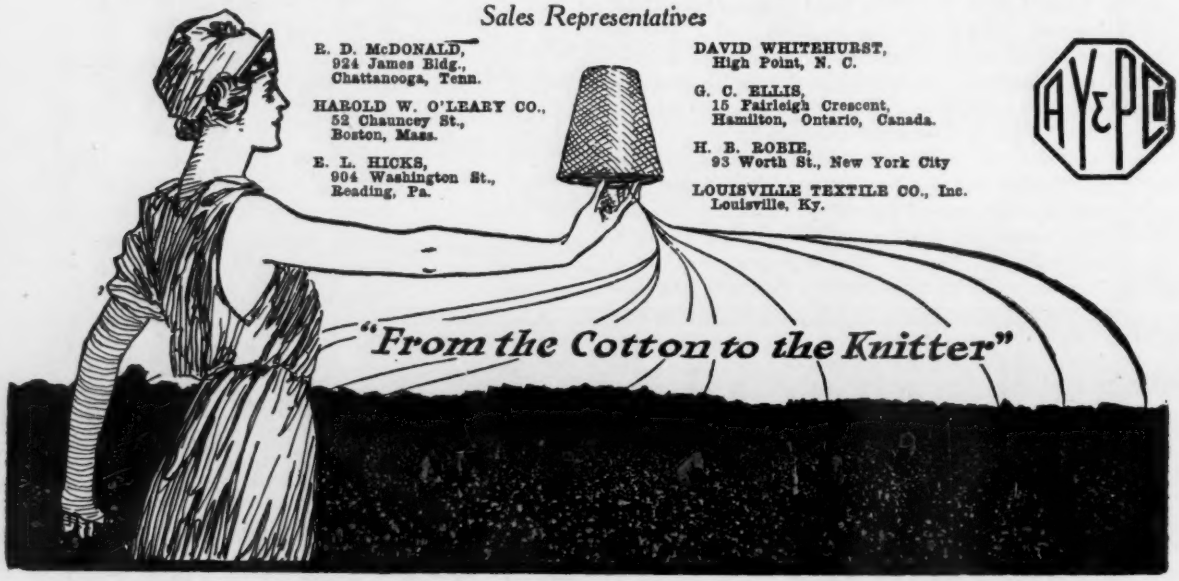

counts of full-fashioned mills, offering evidence of their ability to or prospect for selling the output. Neither got "hooked up."

Overproduction cannot long prevail. Few mills could live through a long period of excess output, selling their goods for cost and less, for keeping organizations intact in the hope of better things. Some tire of losing money and quit the business voluntarily. Some quit only when forced into bankruptcy or a receivership. The majority would restrict production, so that eventually overproduction finds its own remedy, and it seems to be finding it this season. But the cure for excess supplies is a slower one than that for a shortage.

There is seen a possibility of overdoing the production of full-fashioned hose of silk and rayon in combination. The Nolde & Horst Co., in Reading, recently brought out a line of this construction to sell to jobbers for $7.50 a dozen. Prices run as high as $8.50 and above for good hose of the combination yarn, at least one manufacture getting even a higher figure. The range represents a variety of gauge and proportions of silk and rayon respectively. One manufacturer is understood to have brought out an all-celanese number, and another experimented with all-Bemberg. It is stated the experimentation was somewhat disappointing. The aim to be a medium service weight having the appearance and feel of silk, to be marketed as a $1.25 a pair seller. It would appear the day for fairly good dollar full-fashioned hose is fast approaching its dawn and that seamless silk will be of finer than present construction or drop into the 75-cent price bracket.

There is much disappointment in the hosiery trade with the course of the raw silk markets. Manufacturers looked for a rise, on trustworthy reports of increasing deliveries to mills. Day to day fluctuations are discouraging to those who harbored visions of a stiffening. It is believed the easy markets for raw are attributable to unsatisfactory business in broad silks.

Climatic conditions have been unfavorable for women's novelty hose. Business in fancies is reported very light, and there appears to be slow trading in all-rayon goods. Several featured lines of plain mercerized continue to sell fairly well. What is described as wool hose, usually of cotton and rayon with a mere suspicion of worsted in the construction, has been in good demand for goods to sell for 50 cents to a dollar a pair, and manufacturers say they are late with deliveries of the lower price stocking.

Children's hose of wool in mixture is in only fairly good call. Juvenile lines generally have not been outstanding for activity for some time. Narrow zigzag stripes forming diamond blocks are among the better models in both full length and seven-eighth for the current season. For Spring some fetching rayon patterns in rayon—plaited on are shown, but jobbers are not doing much in goods for Spring. Several southern lines of 50-cent hose are sold well ahead for Fall and Winter and mills are reported very busy with contracts and new orders.

A favorite in juvenile moderate price hose is the R I model, popular a few years ago and for a time practically off the market. The revival in R I hose, for both women and children, is one of the surprises of the season. Washington Hosiery Mills, Nashville, Tenn., is knitting a fine gauge R I and is sold well ahead. The company has a strong number also in seven-eighth length of rayon plaited on mercerized yarn, to go over the counter for a half

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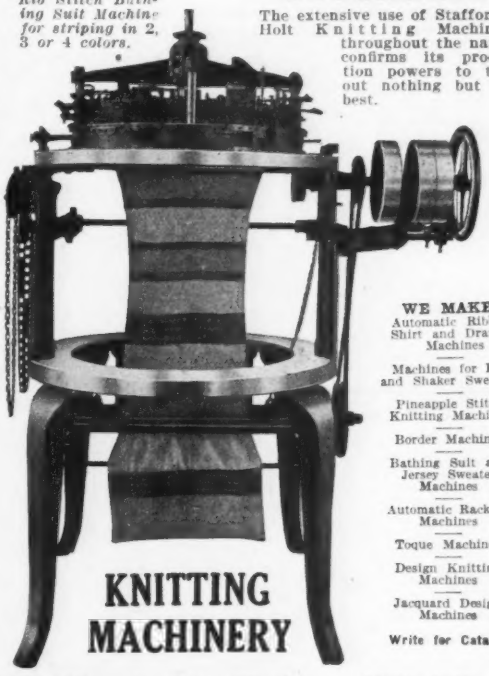

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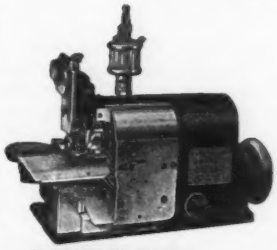

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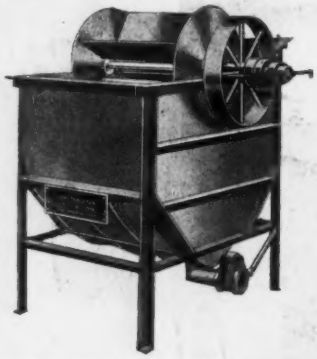

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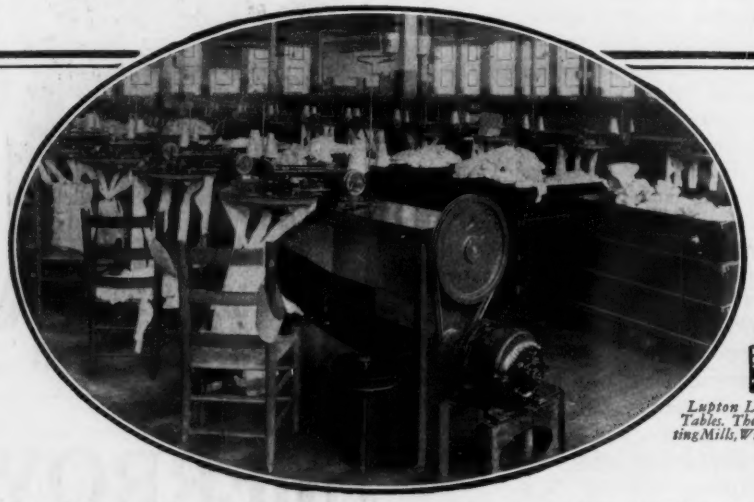

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dollar. The Waldensian Mill, Valdese, N. C., is operating at high speed on women's R I and recently installed additional machines for increasing output of this type of stocking. As like as not, the pineapple stitch, once a favorite, will some day have a comeback in response to the appetite in the trade for "something different".

It was estimated by primary market factors that to the middle of October not more than 25 per cent of the season's business in infants' socks had been placed. Large jobbers had bought conservatively, many of the average small distributors had not placed an order. Usually first in the market, the chain stores this year are backward with their commitments, some having yet to enter initial contracts. There has been considerable idle infants' sock machinery, a mill here and there being closed down for four to six weeks. A manufacturer, whose line is admittedly one of the more attractive, said the other day he was undecided whether to liquidate or move his plant to a southern city.

Chain stores are reported paying the highest prices consistent with their range, and putting very desirable goods in their lines to sell for 10 cents a leg. It is the chains that are causing discomfort for jobbers. Furthermore, lines which had been scheduled for the 50-cent bracket in retail shops and department stores, generally, have slipped back to the 35-cent bracket, where they show a very thin margin of profit for mills. Jobbers want the Fidelity top sock for a 35-cent seller, for mellowing the competition with chains and with the all-rayon fancy designed to go over the counter for a quarter, but which also is found in chain shops for 20 cents. It is the opinion of a leading wholesale distributor that infants' socks are the most perplexing of all items in hosiery. There is reported a good volume of business, relatively, in full-fashioned socks made in Saxony, which sell here for 50 cents a pair, a line in which American mills could not at once compete.

The fact that men's fancy half-hose in the better grades are being bought by some jobbers for Spring is regarded as evidencing absolute confidence in the trade in novelties for the next light weight season. There has now been no unfilled demand for socks to sell for a half dollar a pair, supplies being more than ample and some goods for that bracket being marked down considerably by overloaded mills. Very ancient patterns are being offered freely, at prices which would enable dealers to put them over the counter for a quarter, but are used often at 35, three pairs for a dollar.

Very good dollar socks are not in strong supply. Jobbers are in the market for them, and frequently find mills sold several months ahead. It is understood the Champion Knitting Mills, in Chattanooga, have booked quite a volume of business for Spring, and have nothing to offer for immediate except as to perhaps a very few numbers. An interior Pennsylvania mill in September reported sold up to the end of November of its 50-cent numbers. The concern sells to retailers, including some important chain stores. A silk-rayon sock is a strong seller in the 50-cent division, formerly monopolized by silk-mercerized construction.

Plain color silk half-hose is doing little better than holding its own. A few mills report fair sales of 12-thread socks, going to jobbers at $4.25 a dozen, to retail, of course, at 75 cents. The volume business is in half dollar grades. Seamless socks are feeling more keenly than ever the competition with full fashioned. Fancy half-hose of

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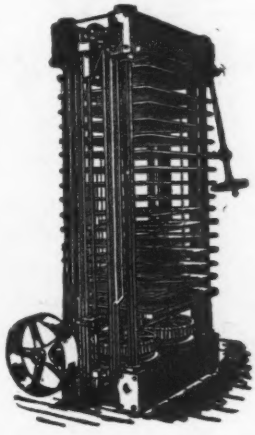

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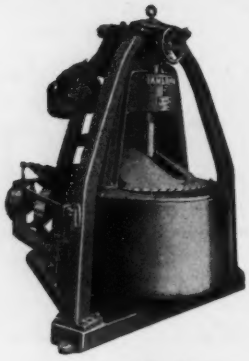

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silk and silk-rayon for the higher price brackets find a profitable outlet. It is viewed as significant that the Moorehead Knitting Co., Harrisburg, Pa., selling to retailers under Monito brand, recently took over a large financial interest in the Schuylkill Hosiery Mills in Reading, specializing in better grades of silk and wool novelties, under the management of F. W. Robinson, who remains as superintendent, in which capacity he is a most important asset.

Wool mixture half-hose, like women's and children's in the wool classification, have been waiting for weather. Jobbers are late with their duplicate orders, and in the event of expected consumer demand developing, will be short of goods, for mills have been making up nothing for stock. This is true, in a general way, of all novelty hose, there being some difficulty in locating desirable cotton fancies to sell for 25 cents a pair. In fact, they have been among the scarce items along with dollar lines.

Underwear.

Steady reorder business in Winter cotton underwear is expected to be offered to the end of the year, and at the moment little or nothing is heard as to an opening date for 1928. Manufacturers doubt whether an opening before the middle of December would be feasible, with the present scale of values prevailing. Most of them will be content with current prices for the remainder of 1927. From now on demand will have to come from the retail trade.

Jobbers are buying only for known requirements, taking a few cases as they sell. They want no 1927 underwear in their year-end inventories. Some who bought right liberally at opening prices are reported having let it go to retailers very early in the year, offering inducements for orders in advance of the time when retailers ordinarily make their commitments. Now these jobbers, along with the rank and file, are paying substantial advances, and find it hard to pass the whole of the increase along to their trade. Some few mills are understood to have sold up nearly their entire year's production at opening prices. There is being delivered no little heavy weight suits and separate garments at the original figures. Yet manufacturers who are adhering to their advances, made after the first leap in cotton, are doing a day-to-day business, and it looks as though their season will close with the usual volume of sales. There was a lull during the September warm period and a mild spurt when temperatures declined in October. With the market up and down on weather conditions, it seems likely that were abnormal temperatures to prevail for a month or two, followed by excessive cold, underwear for late Winter would be scarce.

Some of the leading mills making ribbed and bal briggan men's light weight underwear have booked very satisfactory business in both, at prices showing advances of from 10 to 37½ cents a dozen. There are numbers of instances of important jobbers covering for their initial needs. Prices are attractive and stocks low among distributors, and retailers are believed to have pretty well cleaned up. The P. H. Hanes Knitting Co. has sold heavily of ribs and nainsooks, sales running ahead of those of a year ago, it is stated. The Oneita Knitting Mills, Utica, N. Y., is understood to be very comfortably situated as to Spring business in ribs and bals. Conditions in the two concerns mentioned, representing northern and southern groups, doubtless are typical, in large extent, to those in most mills making standard lines.

The 1928 light weight season seems to have gone off with a flying start, after a few jolts from the rise in raw

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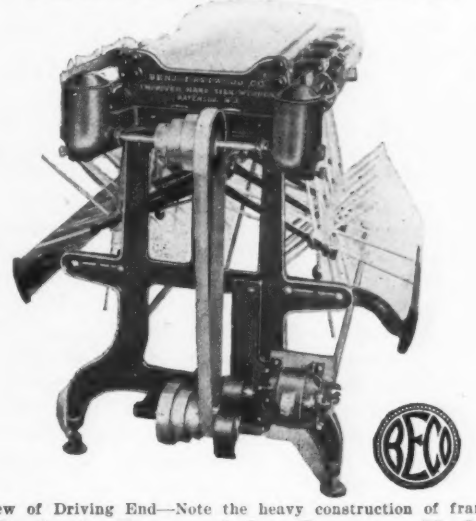

View of Driving End—Note the heavy construction of frame
Benjamin Eastwood Co., Paterson, N. J.
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CAROLINA SPECIALTY CO., CHARLOTTE, N. C.

cotton. Conditions three months after the opening were far better than in heavy weights during most of the first half of the year. Since the bulk of the summer weights will have been taken by retailers before the end of the cotton year and passed on to the consuming element, goods in that division bought at current prices will be regarded a safe and profitable asset.

Most of the manufacturers of women's cotton underwear are well supplied with business in medium weight garments, but have taken very little in vests, which each year are fading as a market commodity. Fine gauge medium weight union suits are going into distribution at about the stage of recent years. The upstate Pennsylvania mills are operating to capacity, and, as representing the survivors in the industry, seem assured of steady and fairly profitable business. They are putting out some very attractive under garments, better sellers since rayon trim is being extensively employed. According to directories of the knitting trades, around 20 mills in the Schuylkill Valley making women's cotton underwear have passed out of existence in the last five years, and two more will, it is understood, be discontinued by the end of the year. One of these, however, is to be merged into a group of two in the Valley that are operated by a large distributing corporation.

There has been no multiplication of rayon underwear factories to compensate for the mortality among the cotton mills. Those producing rayon lines are, as a class, taking a normal Fall business, but hardly can be said to be rushed for deliveries. Output of rayon lines in other manufacturing centers has been so materially expanded that, except as to the better known lines, it is coming to be increasingly difficult to maintain prices on a profitable level. In a way, the trade is experiencing what befell the full-fashioned silk hosiery and men's nainsook underwear industries.

Sweaters.

At the close of their busiest season in years, sweater manufacturers now can figure their 1927 profits. For several months mills were, in many instances, swamped with business. Numbers of late orders were declined, and even at that it was necessary to keep plants in operation from 10 to 20 hours as a work day. Most of the better known mills have for weeks been in arrears with deliveries, but in October managed pretty well to catch up. It appears that jobbers are aiming at bare bins for the inventory period, and that not a few retailers will be left high and dry. Probably more sweaters could be sold were manufacturer and jobber willing to stock up for the accommodation of tardy retailers. As the matter stands, mills may have their hands full until late in December, although there are indications of a lull, which may be but momentary.

Perhaps the more gratifying phase of the business in sweaters is the fact women are using them more generally, conservative sports models being in good, steady call. Shakers are as popular as ever, and this year made a record for sales. New models are planned for next year, and will have their first showing at the opening about the middle of November. In view of the 1927 uplift for sweaters as an all-round proposition, it is expected a substantial volume of business will be placed at the opening, as there was in bathing suits some weeks ago. There since has been some letdown in the swim garments.

Additional machinery will be installed at the Paul Knitting Mills, Radford, Va.

The Arrangement of a Hosiery Dyehouse.

(*Continued from page* 86.)

used in shorter liquor to secure full value from them. Especially is this true of Monel metal, for these products leave it blackened and discolored, similar to the stripping bath on wool in an acid bath, using sodium hydrosulphite formaldehyde.

After a degumming bath on silk and a rayon boiling off bath, the sericin gum and mineral oil mixtures off of the rayon will sometimes stick to the Monel metal. To rid the machine of this, use one per cent of commercial grade sulphuric acid in a bath around 180 to 200 degrees for 20 to 30 minutes. This should be used only as a last resort for cleaning the machine.

To clean and remove all sericin from the degummed silk hosiery, it is sometimes necessary to use benzol on the hosiery; but as a rule, using a water softener and keeping the hosiery well circulated without excessive tangling, with the use of a high grade degumming oil and neutral olive soaps or chip tallow soap, and if necessary adding one per cent soda ash or two per cent tri-sodium phosphate at a temperature for the degumming bath around 205 degrees F., the sericin can be completely removed from the hose and be so emulsified that it will not stick on the Monel metal, which it will do if the water is excessively hard or the hosiery is given a cold wash instead of a hot wash immediately after the degumming bath is let off.

All pipe work should be inspected and the steam pipe blown every Saturday, and allowed to drain over the week-end. This will prevent small amounts of rust from accumulating in the steam pipes and reaching the bleach bath, where they will cause spots and tendered goods in a peroxide bleach.

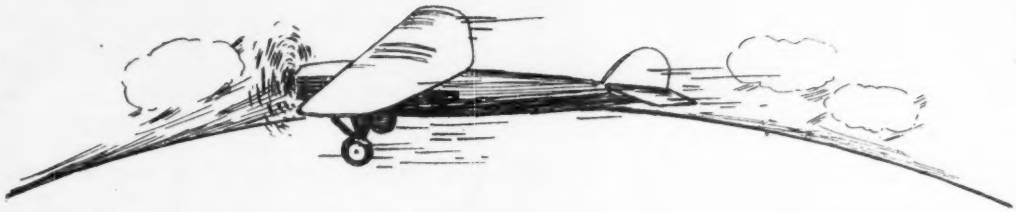
To have the work in preparation and to prevent waste of time in the morning in getting lots through the dyehouse, especially where a mill has a required amount to run every day to keep expenses at a normal rate, I would have each dyeing machine inspected and cleaned ready for work, and enough work in the grey room checked to the dyehouse to insure a lot for each machine and boiling-out tub in the dyehouse.

Then I would have the second hand have all of the goods "carted and bagged" in the weighing carts next to each machine, for the respective lot to be dyed, boiled-out or bleached. By this arrangement, if the second hand or superintendent of dyeing is late in coming to the dyehouse, every man in charge of a number of tubs can secure from the dyestuff or drug room clerk the bleaching materials, oils or dyestuffs necessary for his machine, with written directions made up the day before.

This arrangement usually causes a bit of fussing at first on the part of the dyehouse labor; but it will show results in quick movement and orderliness within a few weeks. The volume and quality of work is improved, for each man knows just where to go for his orders on the respective machines.

If a lot comes back to the dyehouse to be re-worked, if possible it is charged against the machine in which it was finished. Then one can arrive at the real value of each piece of equipment in the dyehouse, and the type of hosiery and operation for which it is most suitable. This varies in every mill. There are numerous agents that cause variation in application and operation, such as water supply,

COAST to COAST SERVICE



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labor, type of equipment, upkeep of equipment, style of goods being run on the same type of equipment and changing of yarns and chemicals because of "penny saving" which causes a loss in production.

It is usually best to have one man do all weighing out from the drug or dyestuff storage room. Then every pound of material is checked out and the various changes are noted on the dyeing and bleaching formulae.

In discussing the high ceiling for the dyehouse, I mentioned having this built onto the regular mill building, which would cause a saving, as only one wall would be necessary for both buildings. Though the identical ideas could be carried out in a separate building to better advantage, but with an increased cost, to secure an arrangement, if the floor space is sufficient, to prevent any dyestuff from flying into the dyeing or bleaching equipment.

My idea along this line is illustrated in Fig. 3. Let *A* be the laboratory, *B* the storage room for oils, dyestuffs

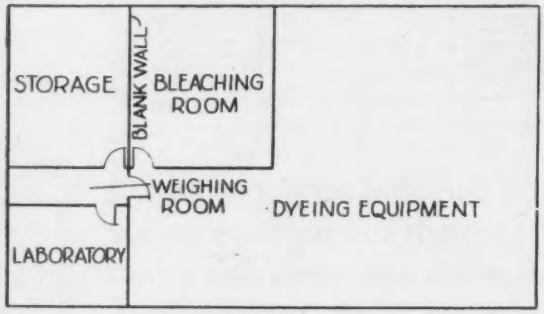

FIG. 3

and chemicals, with a small space in between these rooms where the weighing of all materials can be done, and the scales kept away from the moisture of the dyehouse. A door from the dyehouse proper can lead into the laboratory, and be large enough to carry all barrels into the storage room. If space does not permit, only enough materials should be kept in the storage room for a few days' supply, and the basement can be used as the main storage room. Room *C* can be used as the bleaching room, with only one door leading from the dyehouse and a wall between this and the storage room, to insure a clean "white" room, free from flying dirt and dyestuff. The remainder of the dyehouse floor can be taken up with equipment as noted, and used for carts filled with grey and dyed goods.

Information on Shipping.

Philadelphia Quartz Co., 121 South Third St., Philadelphia, Pa., have issued a circular containing directions for the proper sealing of fiber boxes for shipments going out in this form of package. It is available upon request.

A New National Color.

National Aniline & Chemical Co., 40 Rector St., New York City, have added National Solantine Gray GL Conc. to their line of fast-to-light direct dyes, for rayon and cotton, to be used alone or in combination. The company states it has practically no affinity for animal fibers and is fast to light, washing, sea water, perspiration, alkali, organic acids and rubbing, possessing also excellent solubility and level dyeing properties.

Among the Knitting Mills.

According to report, the Alspach Knitting Co., of Orwigsburg, Pa., will remove machinery for underwear manufacture to Lenoir City, Tenn.

The Oak Knitting Co., of Syracuse and Arcade, N. Y., have closed a transaction whereby the plant of the Lullwater Manufacturing Co., at East Point, Ga., now making woven cotton goods, will be converted into a mill for the production of athletic garments, underwear and sweaters. Machinery from the Syracuse and Arcade plants of the Oak Knitting Company will be removed to East Point. A. G. Velasko is president of the Oak Knitting Company, William Walrath is vice-president, and J. Lansing Crouse, treasurer. The company has organized as Oak Knitting Co. of Georgia, with Mr. Velasko as president and general manager and O. J. Purnell as vice-president and superintendent.

Gardiner-Warring Knitting Mill Company have started operations in their knit underwear plant at Florence, Ala. The company was formerly located at New Amsterdam, N. Y.

Bryant Woolsey, Shelbyville, Tenn., and associates, are interested in a new full-fashioned hosiery mill for Shelbyville. It is understood that machinery has been purchased.

Nebel Knitting Company, Charlotte, N. C., are erecting a 53x160 foot two-story brick building, to cost approximately $25,000.

Oliver Hosiery Mills Co., Shelby, N. C., have been sold to A. V. Victorious & Company, of New York, by Dr. S. S. Royster.

It is reported that Roseknit Hosiery Company, Providence, R. I., will remove its plant to Sumter, S. C.

The capital stock of the Knoxville Knitting Mills Company, Knoxville, Tenn., has been increased from $400,000 to $600,000.

Charles King, of Smithville, Tenn., and Lem W. Smith, of McMinnville, are reported interested in the establishment of a hosiery mill at Smithville.

McDonald & Heathcote, Inc., operating the Girard Hosiery Co., Thomasville, N. C., are planning a new two-story brick building for their plant which was removed from Philadelphia about a year ago.

Argonne Hosiery Mills, Mount Airy, N. C., have been incorporated with a capital of $25,000.

Elizabeth James Hosiery Mills, Marion, N. C., will add an extension to the knitting room and finishing room, the former to be 40x50 feet, and the finishing room addition 24x36 feet. It is understood that 30 new knitting machines and ten new loopers will be installed.

A contract for a plant has been let by the new Wyrick Hosiery Mills, Inc., Mebane, N. C. The plant will be two story, 42x82 feet, containing 50 knitting machines. There will be a daily capacity of 400 dozen pairs of men's half-hose.

Elizabeth City Hosiery Mills, Elizabeth City, N. C., has installed full-fashioned machinery. The equipment consists of Schubert & Salzer's 24-section H. S. L. leggers and footers.

Sellers Hosiery Mills, Burlington, N. C., will erect a two-story, 100x40 foot, addition and will increase the capacity one-third.

L. Smith, High Point, N. C., and associates, will erect a knitting mill, according to a report.